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Fit Engagement: Nurturing Compatibility for Organizational Performance

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Abstract

The aims of this study is to introduce the original concept of fit engagement and propose an integration framework of two distinct construct of employee engagement and value congruence. Further, we theoretically elaborate the engagement-value congruence linkage and builds into a single coherent framework. As a result, the integration framework of employee engagement and value congruence offer an overview of novel perspective and could shed light on how value congruence affects engagement efforts in employment activity. A noteworthy contribution of this study is justified by the originality of the theory analyzed and the dearth of any preceding research dealing specifically with the possible integration between the actions of value congruence on employee engagement. Constructed on a conceptual framework that is presented to guide future research, verification and validation is needed to develop the emerging proposition of fit engagement.

Keywords: *employee engagement; value congruence; organizational performance; human resources development.*

1. Introduction

In the past two decade, the construct of engagement has occupied a prominent place in management and psychological research (Shuck and Wollard, 2010; Crawford, Rich, Buckman & Bergeron, 2014). Unfortunately, as Robertson and Cooper, (2010, p.1) has pointed out, "The current, narrow focus of employee engagement concentrates too heavily on employee commitment, attachment and citizenship behavior". In addition, they proposed that engagement alone is not enough and needs to be incorporated with another construct to provide a better theoretical and practical viewpoint. In similar fashion, Rafferty, Maben, West and Robinson (2005); Richman, Civian, Shannon, Hill and Brennan (2008), stated that employee engagement primarily develops from two earlier concepts of organizational commitment and organizational citizenship behavior and comprise the foremost meaning of them, or in other words, employee engagement act as a groundwork for developing strong levels of belongingness and connectedness in the workplace (Hansen, Byrne, & Kiersch, 2014).

Employee engagement research has identified several positive job outcomes of encouraging attachment at work which include job satisfaction and performance, high levels of well-being, knowledge sharing, and enhanced innovative behavior (Schaufeli 2014; A. Agarwal, 2014). Prior empirical research has established robust study in this issues and concluded that the greater employee engagement, the lower their burnout (Buys & Rothmann, 2010) the greater their job performance (Grumman & Saks, 2011) and the higher their psychological well-being are (Hu & Schaufeli 2011).

Despite the positive outcomes arising out of employee engagement have indeed being well established, these research streams beg question" how to incorporate or integrate engagement at work". Scholars have explored this question within similar research in which engagement can be integrated at work (Robertson & Cooper, 2010). An emergent comprehensive framework is proposed by Brad Shuck, Rocco and Albornoz (2011) to integrate engagement at work and serve as a set of foundation for generating environmental circumstance for engagement to develop.

As evidence by the literature, engagement construct has consistently pointed to the important role of alignment in shaping organization workplace climate (Alagaraja & Shuck, 2015; Albrecht, Bakker, Gruman, Macey & Saks, 2015). Further, Macey, Schneider, Barbera & Young, (2009) stated that alignment-engagement connection is based in how psychological agreement occurs between individual and organization. In this context, sense of engagement combined within alignment or fit between the individual and organization better reflect a more holistic view of engagement, covering both the aspects of narrow engagement that describe positive employee behavior and ensuring the compatibility between focal person and organization.

To this end, we shed light on the integration between engagements and organizational alignment exploring how value congruence interactions associate with engagement both in individual and organizational level. This proposition is relying on the conception that individual have different levels of attachment. Likewise, organization may also not provide enough resources for individual levels sense of meaningfulness in the same way. Therefore, we contend that it is important to utilize the concept of fit engagement which has the potential to affect not only the individual level of employee attachment but also influence the performance of others in the organization. Finally, organizations which seek higher levels of engagement must understand the connection between individual and organization alignment and how this mechanism influences rational and emotional evaluation and the elucidation of the work climate.

2. Why engagement and value congruence?

2.1. Individual and organizational benefit

It has been proposed that high level of engagement and value congruence provides a major explanatory foundation for attachment in one organization and ultimately lead to organizational success (Rich, Lepine & Crawford, 2010). Alagaraja & Shuck, (2015) found that the sense of engagement joined within organizational fit develops from the fostering of a meaningful workplace environment. A workplace that help employees raise their positive emotional connection and interpersonal harmony (Anitha, 2014). Further, researchers have confirmed that the congruence between an individual's self-image with the purpose and values of the organization positively impact on employee engagement, and subsequently associated with employee's attitudes, behaviors, and high performing organization (Erkutlu, Erkutlu, Chafra & Chafra, 2016). For example, a longitudinal study held by Han, Chiang, McConville & Chiang, (2015) revealed that value congruence between employees and the organization has profound impact on employee's contextual performance. Thus, in view of this research we argue that employee's with high congruence perform better at workplace than those with lower congruence; indeed, from this study can be concluded that congruence is a strong predictor of job performance.

From employee's perspective, value congruence represent the attitude and beliefs of workers towards organizational goals, mission, and vision between an employer and employee (Edwards & Cable, 2009). Further, employees who perceive congruence may display higher psychological well-beings (Veage, Ciarrochi, Deane,Andresen, Oades & Crowe, 2014) and resilience (Bissett, 2014). Conversely, employees with lower level of congruence is linked to burn out (Rushton, Batcheller, Schroeder & Donohue, 2015), and deteriorating of mental health (Afsar, 2015). In conclusion, an individual, whose values are compatible with those of their organization, will promote their life satisfaction (Khaptsova & Schwartz, 2014), and ultimately, leads to positive quality of work-life (Spanjol, Tam & Tam, 2015).

2.2. Employee engagements

According to Shuck & Wollard, (2010, p.5) Employee engagement refers to "employee's cognitive, emotional, and behavioral state directed toward desired organizational outcomes". Employee engagement is a persistent psychological state of work experience and reflected the degree to which employee's applies to their work, tasks, organization or group (Schaufeli & Bakker, 2004; Shuck & Wollard, 2010). Despite the fact there is some broad agreement about the term of employee engagement, there is a lack of clarity about its definition and tends to be confusing in the literature (Shuck, 2011).

As a concept that has developed over time, engagement has been defined in numerous ways in the literature. Prior research has provided a lot of evidence that employee engagement can be distinguished as an emotional state and a behavioral response to a specific work environment. As an emotional state, engagement concerns the feelings and beliefs of employees (Baumruk, 2004; Shaw, 2005) and exemplifies ideas such as focus, motivation and passion for the task at hand (Macey & Schneider, 2008). As a behavioral reaction, engagement defined in terms of exerting discretionary effort or a form of in-role or extra-role performance. Briefly, engaged employees say positive things about organization, they plan to stay at that organization and they strive to give extra effort (Hewitt, 2012).

From its historical roots employee engagement related to positive employee behavior and mainly develops from two antecedents: organizational commitment (Meyer, 1997) and organizational citizenship behavior (Organ and Paine, 1999). Employee engagement involves cognitive commitment and emotional attachment and provides meaning and contribute to the quality of work life (Kahn, 1990). The existing study certainly associates employee engagement with numerous aspects of organizational success and financial performance (Harter, Schmidt & Hayes, 2002). However, as noted by Robertson and Cooper (2010), engagement embodies the three concepts of attachment, commitment, and organizational citizenship and its reflection of narrow engagement. Hence, it's necessary to dig a deeper insight to strengthen the effect of a narrow engagement concept with other variables in order to obtain a beneficial impact of positive behavior that helps the company attain sustainable competitive advantage.

2.3. Value Congruence

Value congruence refers to the general fit or similarity in terms of personal values knowledge, skills, abilities and personality between a leader and his/her followers (Cable and Judge, 1996). The fundamental premise of value congruence theories is that when employees work values are shared within the organization values, it will lead to higher organizational performance (Bao, Dolan & Tzafrir, 2012). The concept of value congruence is imperative to organizations because it suggests that if a leader and his/her followers work around a shared purpose and vision, they are likely to develop a fundamental set of values that are more similar. Contemporary employees can draw upon value congruence to encourage interpersonal trust, personal attachment and ultimately, motivation among followers (Dirks and Ferrin, 2002). Additionally, value congruence paradigm may support employees to experience positive interactions with their working environment and feel competent to do jobs well (Han, Chiang, McConville & Chiang, 2015).

As previous research shows, value congruence theory identifies two major explanatory foundations that explain the effect of value congruence process. The first foundation is predisposition function, it associates value congruence with the integration of social relationship and coordination of social activity. The rationale of this view is based on a basic premise that individuals prefer an environment where the values are similar because people who share similar values will understand the organization expectation and are better committed to align with organizational ideals. Hence, sense of alignment glues positive work experience and subsequently enhances employees' performance. As Paarlberg and Perry, (2007, p.4) point out "…Shared values allow individuals to act in a particular way in anticipation of social acceptance, or the reciprocity of similar treatment, or the fear of social punishment…".

The second explanatory factor is self-definition mechanism, a model that can be used to explain this mechanism is cognitive dissonance theory, this original theory predicted that when an individual holds two or more elements (i.e. values, personalities, needs, or abilities) that are relevant to each other and inconsistently implemented, the unpleasant state of dissonance is formed, the existence of dissonance motivates individuals attempt to diminish dissonance and attain consonance (Festinger 1957).

These propositions as alluded above, explained that a broad concept of value congruence needs to encompass a mixture form with key ingredients in predispositions as well as self-definition. In addition, as congruence encourage self-definition by sense of belonging, it may encourage an employee's identification with the organization and ultimately provide employees' significance, direction, and a sense of what is idiosyncratic about the organization, and ultimately resulting in higher engagement and lower emotional exhaustion. (Kilroy,Flood, Bosak & Chênevert, 2016).

2.4. Fit Engagement

On the whole, and as reviewed above, though developed independently, there is enough empirical evidence that a holistic view of fit engagement which integrate both employee

engagement and value congruence is likely to provide a remarkable benefit for employees and organizations alike. Research evidence shows that these two constructs share some conceptual overlap in reflecting the extent to which individuals perceived themselves experience alignment and how this alignment influences cognitive and emotional appraisal and interpretation of the work environment (i.e. meaning, sense of purpose, and mission) (Hockey and Ley's, 2010). Alagaraja and Shuck, (2015, p.32) observed the important effect of alignment on employee engagement and concluded that "Seeking engagement without organizational alignment seems a futile exercise in the shuffling of resources". Hence, the concept of fit engagement depends on the basic proposition that consistency of individual values with pursuance of organizational values is positively related to employee engagement, or in other word, employee that perceives that their values compatible with organizational value is likely heightened their stronger sense of engagement. A research conducted by Li, Wang, You & Gao, (2015) found that value congruence affects employee engagement. They emphasized the relevance of the value congruence experience fulfillment in their work roles and confirmed a higher engagement behavior.

In provision for the potential benefits of fit engagement, our research offers support of the beneficial process in which organizational alignment can meet employee engagement. This construct integration will provide an exhaustive view of engagement. Covering both viewpoint and perspectival aspect of myopic engagement as a positive employee behavior and ensuring the alignment of diverse internal components in the organization. To buttress this rationale, Christian, Garza & Slaughter, (2011) stated that the experiences of value alignment act as important precursor to a worker's willingness to invest their personal energy into the performance of job-related tasks, which is the spirit of engagement. Better aligned employees are likely to be more satisfied in both their life and job and have better mental and physical health (Schaufeli and Salanova, 2007). This translates into higher level of availability to invest themselves into their roles and thus, core self-evaluations should be positively related to engagement (Rich et al., 2010). Preliminary evidence also shows of the importance of congruence for sustaining employee engagement. Their study found that strategic alignment enhanced the relationship between employee engagement and organizational strategic priorities. They argued that if organizations only emphasis on initiatives that target commitment and discretionary effort, without nurturing congruence, these initiatives will be inadequate in the impact they can accomplish (Biggs, Brough & Barbour, 2014). Therefore we have confidence to develop a novel construct of fit engagement, which integrates both the old fashioned engagement that concentrates too heavily on employee commitment and citizenship behavior and the aspect of congruence that reflects a holistic view of fit engagement.

2.5. Prototypical model approaches to fit engagement facilitation

While research appears to support the ameliorative nature of employee engagement in workplace facilitation, we must caution that little is known about the extent to which individual dispositions interact with environmental variables to influence engagement. In one study of critical management journals, articles on research conducted by Jones Davis & Thomas, (2015) and Han, Chiang, McConville & Chiang, (2015) argued that a better understanding of the impacts of competitive work environment can be gained by adopting a P-O fit perspective. Further he explained that the inclusion of person–organization fit contributes to a sense of belonging and allows employees to experience "a sense of home" within the organization and subsequently, it helps to raise their engagement level. Additionally, workers with better congruence are satisfied with their working environment and intrinsically motivated, and those that intrinsically motivated display engagement more often (Hamid and Yahya, 2011). On the other hand, if they experienced lower level of congruence between the person and environment, they will be isolated and detached from work environment and their individual values collide with organizational values, this result eventually leads to lower levels of engagement.

Based on current situation, analysis of the intersecting pathway for integrating value congruence and employee engagement is important. To this end, this study design a model that provides a straightforward HRD practical framework to reinforced the new construct of fit engagement. As noted by Alagaraja and Shuck (2015) powerful engagement occurs when environmental aspect such as organizational cultures, procedures, and strategy and individual attributes such as knowledge, skills, and abilities fit well together or heading in same direction. The basic underlying assumption of the fit theory is that the collective effect of individual characteristic and environmental elements determine individual and organizational outcomes. When person's characteristic and environment elements match each other's, ultimate outcomes will be achieved beyond the particular or additional effects of person and environmental attributes. Based on P-O fit theory, individual is likely prefer this alignment circumstances and will have positive attitudes under such conditions and may result in higher satisfaction and stronger engagement.

Combining the model of employee engagement and disengagement as offered by Brad Shuck, Rocco & Albornoz, (2011) this paper proposes an important integration of value congruence-engagement and the acknowledgement of its effect on employee performance. Thus, in view of this conceptual model, we argue that alignment can act as a linking pin that explicated how individual can interact and produce either engagement and/or disengagement in working environment.

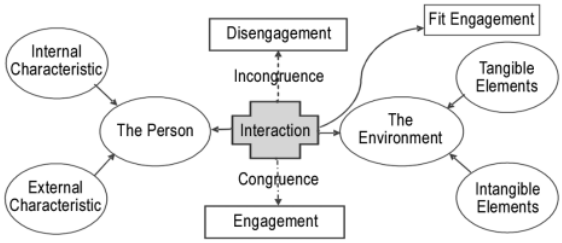

Figure 1. Emerging model of fit engagement.
Source: Adapted from Brad Shuck, Rocco & Albornoz, (2011)

The above conceptual model (Figure 1) shows the intersection of the two dimensions of focus in this research (a) the person internal and external characteristic; and (b) environment tangible and intangible elements. The interaction between environment's tangible and intangible elements with person's internal and external characteristic will emphasize the mutual relationship between nourishing human values and the resources offerings that organizations provide to the creation of organization culture. Soemaryani and Rakhmadini (2013) explained that an organization's culture is what the workers observe and that this observation creates an outline of beliefs, significance and anticipations that support the organization. Thus, for organizations, it's imperative to set the tone of organizational culture in determining employee engagement. The structure, culture, and environment are also identified as a three essential dimensions that integrate engagement at work and help employees to make judgments about the meaningfulness and safety of the workplace (Shuck et al., 2011). Further, engagement occurs only when an employee's experience and interpretation of organizational values, beliefs and standards are aligned with their espoused goals in a meaningful way. In this case, if congruence exists between personal preferences and environmental supplies, this circumstance is

most amenable for facilitating engagement at workplace. Additionally, tighter alignment of organizational values, beliefs, and standards with individual experiences, rationales, and views can enhance employee performance. Therefore, our conceptual model discourses the existing gap in the HRD and management literature by suggesting that the importance of congruence between environmental elements (tangible and intangible elements) and personal characteristic (internal and external) can affect employees' behaviors and performance outcomes in the organization. Moreover, as an individual level motivational state, engagement and disengagement developing from employees' perspective as an accumulation of holistic experience and then construed through their own unique lens, based on their preferred self-image (Shuck et al., 2010).

The consistency of individual personalities, need and abilities and their interpretation of organizational values, beliefs and practices will lead to the process of engagement and disengagement. Alagaraja and Shuck (2015) argued that in the context of alignment, engagement is a psychological agreement that exists between individuals and organizations. Further, they claimed that integration that occurs between engagement and alignment is the result created from continuous monitoring each component of organizational strategy. Overall, increasing interaction intersection between the two dimensions (personal characteristic and environmental elements), indicates better alignment towards the attainment of shared organizational objectives as well as increased employee engagement at work.

To conclude, high congruence between individual and environmental interface resources into theoretical models of employee engagement will, therefore, provide a better understanding of the mechanisms by which organizational values, beliefs, and standards impact and affect how an individual perceives and reacts to work and the organization in specific ways.

3. Conclusion

In recent years, there has been a growing interest in engaging employees with the strategic values and objectives of the organization (Slack, Corlett & Morris, 2015). Further, we expanded the current understanding of strategic management of a firm's human resources through the inclusion of value congruence theory. We have explored the importance of congruence and how managers can facilitate an effective engagement-alignment dialogue. By suggesting the potential ways of implementing and supporting congruence in organizational culture, our purpose is to help in building and maintaining a relationship in the workplace environment and helping practitioner to integrate engagement in organization. Thus, the integration of value congruence theory with engagement theory provides a unique perspective to advance theory development in human resources literature.

The employee engagement literature consistently pointed to the role of good "fit" between the role expectations of employees and their working environment (Herriot, 2002; Morgeson & Dierdorff, 2011). Thus, our discussion suggests that organization should encourage motivation at work through the implementation of a comprehensive engagement-alignment process.

The central proposition of a theory of engagement is how to cultivate positive awareness among employees to nurture compatibility between his/her values and everything that drives the success of an organization's goals. Practically, it is essential for organization to pay attention at strengthening employee's engagement as a priority for achieving organizational objectives by understanding the underlying mechanism of value congruence in the organizational culture and how this instrument stimulate physical, cognitive and emotional aspect of the work experience and finally resulting in meaningful psychological condition that reflects an emotional connection to the organization as a whole (Luthans, 2001). Hence, when there is congruence between individual and organizational values, it induces more positive employee attitudes and create a sense of communality of purpose which ultimately leads to psychological conditions of meaningfulness, safety, and availability (Biswas & Bhatnagar, 2013) as a reflection of engagement. The strong and positive relationship between employee engagement and value congruence sheds light on making followers cohesive culture in which the emotional and cognitive attachment of employees depends considerably on the "fit" between their personal values and the values of their team and organization.

According to the Kurt Lewin's field theory (Lewin, 1951) each individual, based on a myriad life experiences, holds their own perception about their work environments. These situations sequentially forming a strong foundation for engagement and value congruence to interact. Lewin (1951) argues that individual behaviors are shaped by the organizational environment. The interaction between individuals and the environment in which they work will result in different behaviors, when individuals interpret that their working conditions are remarkably meaningful, their self-identification with the organization will strengthen and encourage employees to display positive behavior. Conversely, if the individual consider his place of work, does not hold an appropriate value or not provide a fulfilling sense of purpose, this condition will encourage individuals to form a negative perception of the organization, the employees will lose meaning and psychological safety, and cause them to withdraw from the community and triggering breach in the relationship between individuals and organizations. Hence, we expected that individuals who apprehend greater perceived fit with their organizations that stimulate them to explore new ways to approach their jobs role and also to go for extra miles, which may be construed as a high level of engagement for their jobs and the organization for whom they work.

In view of this understanding, it can be seen that the achievement of fit engagement is not a naturally occurring or simple outcome to achieve since it depends on organization ability to cultivate suitable working environment, that are aligned with personal characteristic. So, it is argued that the full power and impact of this comprehensive fit engagement process is only accomplished when all of organizational constituent is able to develop synergistic interaction between their personal values and the environmental resources and create an appropriate organizational culture that contribute to improving performance.

Additionally, According to Branson (2007, p.5), "Building alignment within an organizational context is about enhancing the group's capacity to think and act in new synergistic ways, with full coordination and a sense of unity, because each person knows each other's hearts and minds". Hence, in order to facilitate engagement at work, engaged employees must first align their efforts toward cooperative and collaborative process and proactively support the application of these values in their daily organization activity. As a final conclusion, integration and elaboration of the engagement-value congruence linkage into the construct of fit engagement could be the bedrock and foundation for organizational long term success and provide new theory building in human resources development.

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Research of Factors Influencing the Susceptibility to Innovation and Innovative Activity of Russian Companies

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Abstract

The article proposes a new methodological approach to the study and evaluation of external factors affecting innovation activity and susceptibility to innovation of Russian companies. External factors were estimated, a correlation model was built, and key factors affecting innovation activity and susceptibility to innovation of Russian companies were identified. A regression model reflecting the dependence of the level of innovation activity of Russian companies on changes in environmental factors in the dynamics from 2010 to 2017 was constructed.

Keywords: *innovative activity; innovative organization; innovative economy; human capital; external environment.*

1. Introduction

Today in Russia there is a low innovative activity of enterprises and organizations. The diagram (figure 1) shows the indicators of innovative activity of Russian companies in dynamics (Innovation statistics, 2018).

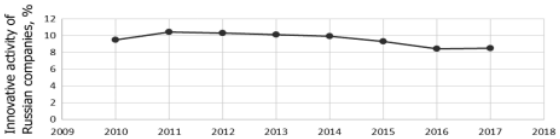

Figure 1. Innovative activity of Russian companies in dynamics from 2010 to 2017

To increase innovation activity and susceptibility to innovation of Russian organizations, the authors of this study propose to assess the impact of external conditions, to determine the factors that have the greatest and least impact on innovative organizations.

2. Materials & Methods

The external environment provides opportunities for any company to organize its successful activities, as well as the necessary resources to maintain the company's potential. The management of the enterprise needs to control the relationship with external factors, as the company is in close interaction with the external environment, both in the production process and in the process of implementation. There are four main characteristics of the external environment.

First, it is a difficulty. The complexity is due to the number of factors affecting the company. Complexity is an element that characterizes the number of environmental factors and the relationship between these factors. The external environment in terms of complexity can be classified as: homogeneous (simple environment) in which there is not a large number (3-4) similar elements of the external environment affecting the organization, and heterogeneous (complex environment), which contains a large number of heterogeneous elements of the external environment of the company, affecting the organization, and are in close interaction with the company.

A homogeneous environment is more predictable for the Manager, which simplifies the process of development and management decision-making. The multiplicity and uniqueness of the factors influencing the activities of the organization is the number of significant objects, as well as their close connection with the activities of the organization.

The difficulty lies in the fact that the company has to deal with a wide range of factors, the close connection with the activities of which is not always certain, but is of great importance.

Secondly, it is the interconnectedness. The content of the element of interconnectedness is that the impact of some factors has an impact on the changes of others, and there is a degree of these changes. Interconnectedness of factors is the basic characteristic that determines the relationship between the company's activities and the impact of the external environment. Dependence or independence shows the density of the relationship of the company's activities with the external environment.

Isolation is also an indicator of the relationship between structures in the external environment. An isolated environment is peculiar by an unstable structure of communication with the subjects, or their absolute absence.

The company in its activities, as a rule, is always in interaction with customers, partners, suppliers, consumers, competitors. At the same time, any company in its activities strives for maximum independence.

Third, uncertainty. The essence of the uncertainty element is the degree of ownership of information about changes in the environment, as well as the degree of confidence in the

reliability and accuracy of the information received.

A situation in which the company does not have sufficient information on the status and trends of external factors of Seda increases the risk of unsatisfactory performance of the company as a whole.

Fourth, variability. By its nature, the element of variability is to determine the mobility of environmental factors.

For the successful functioning of any company, the most important thing is the stability of relations with the external environment. In situations where there is a high level of complexity and mobility of the environment, then to solve these problems, management needs to rely on information obtained from different sources, as well as be able to change their own priorities. In some cases, to make successful decisions, it is important to be able to revise the formed system of values and culture of the company.

In the context of dynamic changes in environmental factors, it is necessary to carry out regular monitoring and analysis of new strategies and approaches. This knowledge will allow to make adequate and balanced decisions.

It should be marked that today there is no single established classification of factors affecting the innovation of staff. Today, there are several opinions about what factors have an impact on work motivation.

Several specialists classify factors only on the basis of classification on the basis of belonging to external and internal, direct and indirect. Factors with indirect effects are more complex than those with direct effects. For our research, indirect impact factors are of greater scientific interest.

Factors of indirect influence of the external environment are classified into five groups, while external factors experts include: political and legal (changes in the regulatory framework and the political situation in the country), economic (General state of the economy, the state of the labor market, capital, changes in working conditions), technological (changes in technological standards, the development of technologies in the field of production and business processes), social (social standards, ethnic norms, social values, social and psychological factors), international (international migration, etc.).

The impact of political factors on the innovation activities of the company and on the efficiency of the use of labor resources is manifested in the following: the definition of rules and norms of profit taxation, the establishment of tax benefits, the establishment of subsidized trade duties, requirements for the practice of hiring labor, control of tariffs, the establishment of wage rates, etc.

For companies operating internationally, political stability plays an important role. The indicators characterizing this type of factors include: government performance index, corruption perception index, political stability index, political rights index, number of Federal targeted programs to support innovation, infrastructure for innovation development (special economic zones).

The political rights index applies to assess categories such as electoral process, political pluralism, government participation and functioning.

The presence of Federal targeted programs to support innovation characterizes the government's interest in the development of innovation, which in turn allows us to give an answer about the need and the possibility of investing in this area Increasingly, this index is important for assessing the development of education in R & D. Since the dynamics of this indicator allows us to estimate the potential demand for it.

The dynamics of the indicator of infrastructure for the development of innovation also indicates the demand from the state and the government for activities in the field of innovation. Since one of the main tasks of the organization and special economic zones is to provide special preferential conditions for the development of activities.

The company's management in the field of innovation is important to competently assess the impact of changes in the economy on the company's activities. The lack of funds in the economy inevitably affects all sectors, including education, the amount of expenditure on R & D, social support, etc. In turn, all these factors, due to the close relationship with economic entities have a negative impact on the development of these entities.

The indicators that characterize this type of factors (economic factors) include: the global competitiveness index, investment in intellectual property, investment in fixed capital, R & D costs, the share of organizations that used global information networks from the total number of surveyed.

The global competitiveness index includes 12 components of competitiveness: infrastructure, macroeconomic stability, health care, primary education, higher education, vocational training, product market efficiency, labor market efficiency, financial market complexity, technological readiness, business complexity, innovation.

Investment in intellectual property is one of the key factors of the investment market. For effective development modern production requires a developed market of intellectual goods, in other words, investment in intellectual capital.

Investments in fixed capital are investments aimed at the acquisition, development or expansion of fixed assets, which are indispensable and one of the most expensive tools in the production of innovative products. The impact of this factor on the development of human resources is of great value, because the sphere of innovation cannot function without high-quality perfect equipment. The effectiveness of the staff of an innovative organization depends on the capital intensity, and the capital intensity on the volume of investments in fixed assets.

R & D expenditure is a comprehensive indicator of the total expenditure incurred on research and development work.

The share of organizations that used information networks from the total number of surveyed – characterizes the degree of involvement of organizations in global information networks, and therefore indirectly indicates the level of information development, the level of access to modern software and to obtain relevant data. Both in the sphere of scientific knowledge and in the sphere of factors influencing the innovative activity of the company in General and the staff in particular. The indicator of expenditure on education, and especially its dynamics, shows the government's interest in improving the level of education and training of highly qualified personnel necessary for the development of innovation.

The indicator of public expenditure on education complements the previous indicator and shows the share of expenditure on education in the GDP structure and, accordingly, shows the trend of state policy in training and development of the economy as a whole.

Technological factors are also of great importance. It is important to take into account the interpretation of the term "technology", since its meaning is too broad, including: processes of production activities, methods of production activities and techniques of production activities.

The introduction of technological innovations has an impact on the efficiency of innovative production, as well as on the speed and methods of collecting and processing information.

Currently, the speed of technology change is very high. Among the main major innovations of the technological field, which have received mass distribution, we can distinguish: computer technology, laser development, microwave technology, semiconductor technology, integrated communication lines, robotics, satellite communications, nuclear power, synthetic fuel, as well as food, genetic engineering, etc.

For the effective development of an innovative enterprise, it is necessary to provide a rapid response to the development of a new generation. The indicators characterizing this type of factors include: global innovation index, innovative activity of organizations, the share of organizations engaged in technological innovation in the total number of surveyed organizations, the share of organizations engaged in management innovation,

the cost of technological innovation, the number of patents granted for industrial designs, the number of shipped innovative products of its own production, developed advanced production technologies.

The global innovation index is the result of a global study of the countries of the world community to determine the level of innovation. The index expects according to the methodology developed by the international business school "INSEAD" in France. To date, this index characterizes the most complete list of indicators of innovative development in different countries. The indicators studied in determining the global innovation index include 82 variables that describe in detail the development of innovation in countries.

The index of innovative activity of the organizations is the characteristic of innovative activity in a complex containing information on susceptibility to innovations, degree of intensity of the realized actions directed on transformation of innovations, ability to providing the applied methods, rationality of technological process of innovations.

Innovative activity demonstrates readiness to modernize the main components of the innovation system: knowledge, technological equipment, informatively and communication technologies.

In addition, innovation activity shows susceptibility to innovation.

The share of organizations engaged in technological innovations in the total number of surveyed organizations shows the degree of development of innovative activity in the total volume of the business community. The indicator of the number of granted patents for industrial designs characterizes the development of the sphere of innovation and the level of availability and involvement of research personnel, as well as this indicator indirectly indicates the capital intensity of the innovation process. The indicator of the developed advanced production technologies allows to estimate efficiency of the organization of innovative production in a complex. And also is an indirect indicator that characterizes the efficiency of the use of labor resources in innovation.

Each organization operates in at least one cultural environment. As a result, the company is affected by various sociocultural factors, as well as customs, values and attitudes.

Socio-demographic factors have a special impact on the staff of innovative organizations. Such factors include: the level of employment, level of unemployment, the number of personnel involved in R & D, business units in organizations engaged in technological innovations, the release from postgraduate study with thesis, the level of economic activity of the population, the size of the minimum wage, the population with incomes below the subsistence minimum, morbidity of population occupational injuries, the duration of life of the population, distribution of total cash income and characteristics of differentiation of cash income of the population (including 20 percent of the population), population change (increase/decrease) for the year, the human development index, etc.

The level of employment characterizes the activity of the population in the economic environment. Also, this indicator is an indicator of the level of economically active population in terms of age. In other words, in the study of environmental factors affecting the personnel of an innovative enterprise, this indicator can be estimate as an indicator of labor potential.

The unemployment rate indicates the level of economic development in the country, high unemployment is characterized by a slump. Accordingly, in this case, the volume of investment in innovation can also be abridged, which will subsequently affect the efficiency of innovation in General.

The number of personnel engaged in R & D indicates the involvement of staff in research activities. The study of this indicator was performed in the dynamics, as well as in relation to the indicators of production of R & D, indicators of R & D costs and education costs.

The indicator of graduation from graduate school with thesis defense characterizes the dynamics of the personnel market required for the development of innovation.

The size of the minimum wage characterizes the provision of the population with money, and, consequently, purchasing power.

The indicator of morbidity is important in the study of the labor potential of innovation.

Life expectancy is important not only to determine the work potential, but also to determine the need and appropriateness of investment in staff education.

Enterprises operating in the international market face a higher level of complexity. This fact is due to the unique factors that characterize each country individually: culture, economy, quality and quantity of labor resources, regulatory framework, political stability, level of education, level of technological development, etc.

The international factors influencing the labor resources of the innovative company include: international migration, participation of organizations in joint international innovation projects, the share of national presence in the international market of high-tech products (export of high-tech products from Russia) in % of the world volume of exports of high-tech products, technical achievements (rights to patents, R & D results, know-how, technology transfer agreements, purchase of innovative equipment) acquired abroad by Russian organizations, carrying out technological innovations, new Russian technologies (technical achievements), transferred to foreign organizations, the volume of exports of innovative goods and services, changes in the ruble to the dollar at the end of the year.

The factor of international migration characterizes the mobility of the population, enhancement or decrease due to migration. Undoubtedly, the inflow of highly qualified and educated people is positive for R & D purposes.

The index of participation of organizations in joint international innovation projects) shows the level of activity of enterprises in the field of R & D, and accordingly the level of training of domestic staff and their readiness to work in joint research projects.

The share of the national presence in the international market of high-tech products demonstrates the level of innovative development of the country's economy in general.

Technical achievements acquired abroad by Russian organizations engaged in technological innovation, shows the degree of interest of Russian organizations in the development of innovation and the use of experience of foreign partners.

The number of new Russian technologies (technical achievements) transferred to foreign organizations characterizes the success and efficiency of domestic R & D enterprises. It should be noted that the value of this indicator should exceed the value of the indicator demonstrating the acquisition of foreign technical achievements. In this case, it will be possible to talk about the effectiveness of the innovation process in the economy in general.

Changes in the ruble exchange rate to the dollar at the end of the year-this indicator in the crisis situation in the economy is one of the most relevant. Since in recent years, the ruble against world currencies has undergone significant changes. Currently, the currency still has an occasional character that has a strong influence on innovation activities of relevance to international contracts.

The analysis of external factors needs conduct on an ongoing basis, as it accumulates information that allows an assessment of the current situation.

Analysis of the external environment is the process by which the developers of strategic innovation direction in the company keep under control external to the organization moments to qualify threats and opportunities. The analysis of the external environment contains:

- economic impact study;
- study of the impact of legal regulation and management;
- study of political processes;
- study of the natural environment and resources;

- research of social and cultural component of society;
- research of scientific and technological development of society, infrastructure, etc.

Qualitative analysis of the external environment can help to obtain meaningful results. Eventually of timely carrying out of such analysis the organization receives:

- time to predict probabilities;
- time to draw up an intention in case of unexpected events;
- time to develop an early warning system for probable hazards;
- time to develop strategies that have all the chances to turn the former dangers into all sorts of profitable opportunities.

3. Results & Discussion

The purpose of this study was to assess the factors of the external environment that affect the workforce of an innovative organization. Evaluation of environmental factors consisted of the following stages:

In the first phase, "Assessment of factors of the external environment" was decided the following tasks:

1. The factors of the external environment that influence the human capital of an innovative organization are determined.
2. The indicators characterizing the factors of the external environment (81 indicators in total) in the dynamics from 2010 to 2017 are selected.
3. The resulting indicator (number of innovative organizations) was selected.
4. The main key external factors affecting the human capital of innovative organizations and contributing to or hindering their innovative development are identified.
5. The regression model is constructed and tested for its adequacy using Fisher's Criterion.
6. The analysis of the obtained regression.

All indicators are statistically significant and in the process of correlation and regression analysis reveal the degree of influence of changes in factors on the resulting indicator.

Further, by constructing correlation based on Rosstat data identified the main factors, which the largest and smallest impact on the change of the result indicator (Hochberg, L, 2018, Kovaleva G., 2018, Gorodnikova, N., Hochberg, L., 2018).

4. Conclusion

According to the results of the correlation analysis it can draw concludedthat the greatest impact on the change in the resulting indicator (the number of innovative organizations) have:

- corruption perception index (99.4%);
- share of organizations using global information networks (97.8%);
- investments in fixed capital (96,83%);
- the number of units in organizations engaged in technological innovation and (96.6%);
- employment rate (95.88%);
- developed advanced production technologies (95.64%).

Factors that have had minimal impact on the performance:

- number of development institutions (0.52%);
- change in population (of 2.8%);
- investment in intellectual property (11.58%);
- the index of governance quality (2,0028%)
- purposeful employment of foreign R & D specialists (20,058%);

It should be marked that the impact of the above factors is minimal since these factors are characterized by irregularity at low cost.

Thus, the obtained practical results can applied in the activities of organizations in the development of innovative development strategies, as well as in public administration of the economy in the development of innovative economic development.

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The Efficiency of Sales Promotion Methods Emphasing the Impulse Behaviour: Case of Serbia

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Abstract

The purpose of this paper is to investigate the effectiveness of sales promotion methods in terms of encouraging consumers to accelerate their purchase, i.e. to conduct impulsive purchases. The analysis of the collected data was performed using two statistical methods: ANOVA and t-test. The survey was conducted with a pool of 376 respondents and the results showed that discounts are the most effective way to improve sales while creating most responses in consumer behaviour, while coupons are the least effective. Due to the obtained results, the paper will have a contribution both for marketers and brand managers, as well as for the future research on this or similar topic.

Keywords: *sales promotion; discounts; bonus packages; premiums; free samples; coupons; rewards; loyalty cards; demonstrations and product tests; impulsive consumer behaviour.*

1. Introduction

According to Yin and Jin-Song (2014) and Solomon (2017), impulsive purchases are those that consumers do not specifically plan before entering the sales facility, i.e. in advance, but perform them "in the moment" (Eng. *spur of the moment*). In other words, impulsive shopping is a consequence of consumer failure to measure his options before purchasing. They will be ready to suddenly and quickly do the shopping of those products and/or services they believe to represent a good deal. As a result, many companies, i.e. their marketing departments, put great effort to influence consumers to make impulsive (unplanned) purchases, thus it is no coincidence that the baskets in supermarkets are larger. Chocolates and chewing gums are placed at the store exit, while at the same time bags and wallets are displayed on the same department as a fully compatible combination. Also, the most famous price trap .99 or a price reduction on that very day encourages the consumer to believe that it is the products that he really needs.

Shops use this desire to save by telling us how much we will save by buying and using their product. Why do we have this desire at all? Thousands of years ago, people's lives depended on whether they saved enough food and wood for the winter. Today, we no longer have these concerns, but this evolutionary instinct has remained. In short, today we find it difficult to resist the occasion to save money or time.

These are just some of the examples of what sellers and marketing experts can do to encourage impulsiveness while buying. An important factor related to consumer behaviour is the desire for ownership or the need for possession. This concept is of great importance for stimulating impulsiveness consumer behaviour research.

This need arose as a result of the fact that we, as children, have learned to feel good when someone gives us something new. Even though gifts were valued in the past, nowadays, although it is economically rather difficult, we continue to buy ourselves and our children, but not because it is nice to give or receive a gift, but because the goal is simply to buy something new. Unfortunately, nowadays the exploitation of this particular need has become the key to sales promotion (http://mariopilar.com/prekrenite-impulsivnu-kupovinu-u-svoju-korist-i-unapredite-prodaju-odmah/ and https://www.psychologytoday.com/blog/sold/201207/what-motivates- impulse-buying).

2. Literature Review

Consumer-driven sales promotion refers to incentives that are directly offered to consumers of a particular company or its potential consumers in order to speed up their decision-making process regarding the purchase of that particular company's products instead of the competitors' ones (Kotler and Armstrong, 1994; Moriarty *et al*., 2012; Palmer, 2004; Percy, 2008). These are various short-term promotional methods that add value to products (either by reducing costs or by adding benefits) and thus are seen as an unambiguous incentive to make purchases (Srinivasan and Anderson, 1998; Du Plessis *et al.*, 2010). More precisely, these methods are used to foster certain responses in consumer behaviour, such as (Shi *et al*., 2005):

- Brand change (purchase of competing products);
- Making inventories (buying a larger amount of products than planned);
- Acceleration of a purchase (pre-planned purchase - impulsive purchase);
- Testing those products that have not been purchased so far and
- Spending more money than planned.

Some of the most important consumer-driven sales promotion methods, which were also used as variables in this paper, are: discounts, free samples, bonus packages, premiums, loyalty programs (cards), rewards, coupons and demonstrations and product tests.

Nowadays, there is a great deal of research in literature that examined the impact of sales promotion methods on the consumers' impulsive behaviour. It is important to note that almost all of them came to the conclusion that most of the observed methods (if not all) have the impact, expressed to a greater or smaller extent. Thus, for example, according to the results of some recent research (Osman *et al*., 2011; Tinne, 2011; Banerjee and Saha, 2012; Rittipant *et al*., 2013; Nagadeepa *et al*., 2015), discounts are the method which motivates the consumers most to perform impulsive purchases. The reason why this is the case is a pre-defined desire to save. More precisely, discounts provide the buyer with a temporary reduction in price and thus direct value, and therefore are seen as an unambiguous incentive to purchase (Jobber and Fahy, 2006). Among others, those that stand out are certainly bonus packages, loyalty cards, free samples, coupons and rewards, whose strengths vary depending on the research. According to Osman *et al.* (2011) discounts and free samples are the most important methods that affect the consumers' impulsive behaviour, while according to Tinne (2011) these are discounts and bonus packages. The results of the last study were confirmed by Rittipant *et al.* (2013), stating that the biggest impact is noted by discounts, followed by bonus packages, loyalty cards and coupons with the least impact. On the other hand, Nagadeepa *et al.* (2015) found that discounts and loyalty cards are those methods that have a significant impact on encouraging consumers to go shopping before the planned moment, while this cannot be said about coupons, rewards, and bonus packages.

3. Method of Study

3.1. Data collection and sample characteristics

The sample was composed of respondents of a different demographic profile who were contacted on the spot, i.e. in front of three supermarkets in Kragujevac (Dis, Maxi and Idea), in which some of the mentioned methods of sales promotion were used in that period (September 2018). At that occasion they were asked to answer the question whether they often buy products. If their answer was positive, then they were asked to leave their contact details (e-mail address and mobile number), so that they could have been sent a survey which they were then asked to fill in. All those consumers who did not fill in the given survey within three days were sent a request to their mobile phone numbers to fill it in. Thus, it can be concluded that *the basic method of research* in this paper was the questionnaire filled in by the respondents via the Internet. This method was chosen because the respondents did not have enough time to provide all answers to all planned questions immediately, as well as because his application would result in more precise answers which are easier to compare later. Finally, the survey was conducted on a sample of 376 elemental units. Among all respondents, there were 37.8% male respondents and 62.2% female; the age of the subjects ranged from the age of 20 to 84; 75% of respondents have a high level of education, 18.9% have secondary education, and 5.9% have higher education, while only one respondent has lower professional qualifications. Observed by regions, the highest number of respondents is from Šumadija and Western Serbia (58.5%), from Belgrade (19.4%), Vojvodina (12.5%), South and East Serbia (8.2%) and finally Kosovo and Metohija (1.3%). Out of the total number of respondents, 51.6% of them said that they do the shopping in supermarkets once a week, 24.2% of the respondents do it every day, 11.4% of them once in two weeks, 7.4% once a month, 2.9 % less than once a month, while the rest does it once in three weeks.

3.2. Methods

The survey questionnaire contained precisely defined *statements* that relate to certain responses in the respondents' behaviour (brand change, making a stock, acceleration of a purchase, testing the products that have not been purchased so far, and spending a larger amount of money than planned) which is created by each of the observed methods (discounts, bonus packages, free samples, coupons, premiums, rewards, loyalty programs and demonstrations and product tests). All collected data were stored in the SPSS database (Statistical Package for Social Science, version 20.0). Also, this program was later used for the analysis of given statistical data.

The respondents expressed the degree of agreement with defined statements in the five-step Likert scale (1 - I completely disagree, 2 - I do not agree, 3 - I partially agree, 4 - I agree and 5 - I completely agree). These statements were selected on the basis of a review of relevant literature in the field of sales promotion and consumer behaviour, that is, the influencing factors (Gilbert and Jackaria, 2002; Shi *et al.*, 2005, Osman *et al*., 2011; Tinne, 2011; Banerjee and Saha, 2012; Rittipant *et al.*, 2013; Ashraf *et al*., 2014; Obeid, 2014).

The analysis of statistical data was performed by using two statistical methods. The differential analysis was used to identify possible differences, specificities, or effects between the two groups of variables (Burns and Bush, 2014). From the techniques of this analysis, one of the parametric techniques was used in this paper, namely the one-factor ANOVA of repeated measurements. It was used to initially compare the five responses in the behaviour of the respondents to each of the observed methods of sales promotion. In this way the efficiency of each of the observed methods in creating responses in consumer behaviour has been determined. The same statistical technique was then used to compare the established efficiencies, in order to examine which of the given methods is most effective in creating a certain response in the behaviour of the respondents. It is important to note that although this test showed significant differences between the observed variables, the t-test of the paired samples was then performed, as another parametric technique, in order to establish this difference. To determine the statistical significance, a 95% confidence interval was used, i.e. the coefficient of risk $\alpha = 0.05$.

4. Results and Discussion

	Discounts	Demonstrations and Product Tests	Coupons	Bonus Packaging	Free product samples	Rewards	Loyalty cards	Premiums
Brand change	3.13	2.60	2.28	2.90	2.66	2.32	2.28	2.96
Acceleration of the a purchase	3.71	2.44	2.36	3.38	2.60	2.40	2.35	3.10
Making a stock	3.42	2.23	2.32	3.46	2.36	2.35	2.36	3.08
Product Testing	3.06	2.78	2.28	2.72	2.66	2.25	2.20	2.82
Spending more money	3.47	2.32	2.20	3.17	2.36	2.28	2.37	2.80
Sum	16.79	12.37	11.44	15.63	12.64	11.6	11.56	14.76
Average	3.36	2.47	2.29	3.13	2.53	2.32	2.31	2.95

Note:
1 = I completely disagree to
5 = I completely agree

Table 1. Mean values of the response in the behaviour of the respondents to the observed methods and the mean value of the influence of the observed methods on responses in the behaviour of the respondents

Discounts – One-factor ANOVA of repeated measurements showed that there is a significant difference between the five responses in the behaviour of respondents (consumers) to discounts (Wilks' Lambda = 0.751, $p < 0.05$). Therefore, t-test of the paired samples was also used to compare the mean values of these responses. According to the Table 1, five responses in the behaviour of respondents to discounts can be divided into two groups. The first includes purchase acceleration (AM = 3.71), spending more money (AM= 3.47) and making a stock (AM = 3.42). On the other hand, the second group includes a brand change (AM = 3.13) and a product testing (AM = 3.06). Based on this division, it can be concluded that respondents believe that discounts are more effective in creating the first group of responses in their behaviour, rather than the other.

Demonstrations and Product Tests – The same tests were conducted for this method of improving sales directed towards consumers. The results were again statistically significant (Wilks' Lambda = 0.747, $p < 0.05$). By conducting the t-test of paired samples, it was concluded that respondents did not consider demonstrations and product testing as a very effective method for creating responses in their behaviour (Table 1). This method was evaluated as relatively effective for encouraging subjects to test the product (AM = 2.78), then as less effective for encouraging respondents to brand change (AM = 2.60), acceleration of a purchase (AM = 2.44) and spending more money than planned (AM = 2.32) and ultimately as least effective to encourage respondents to make inventories (AM = 2.23).

Coupons – One-factor ANOVA of repeated measurements showed that there is a significant statistical difference between responses in the behaviour of respondents to this method of sales promotion (Wilks' Lambda = 0.964, $p < 0.05$). It was therefore justified to use the t-test of paired samples, which led to the conclusion that the mean values of these responses are slightly different (Table 1). According to respondents, coupons lead to acceleration of a purchases (AM = 2.36) and making a stock (AM = 2.32) to a great extent, unlike spending more money than planned (AM = 2.20).

Bonus Packaging – By performing a single-factor ANOVA of repeated measurements, there is a statistically significant difference between responses in the behaviour of respondents to bonus packages (Wilks' Lambda = 0.704, $p < 0.05$). Therefore, t-test of the paired samples was also used to compare the mean values of these responses. The results of this test (Table 1) showed that the bonus packages were the most effective in encouraging respondents to make inventories (AM = 3.46) and acceleration of a purchase (AM = 3.38), less effective in encouraging respondents to spend more money than planned (AM = 3.17), while they are most effective in encouraging respondents to test their product (AM = 2.72) and brand change (AM = 2.90).

Free product samples – The same tests were conducted for this method of sales promotion. The results were again statistically significant (Wilks' Lambda = 0.816, $p < 0.05$). By comparing the mean response values in the respondents' behaviour, it was concluded that five responses to the behaviour of respondents to free samples can be divided into two groups (Table 1). The first group includes a brand change (AM = 2.66), product testing (AM = 2.66) and acceleration of a purchase (AM = 2.60). On the other hand, the second group involves making a stock (AM = 2.36) and spending more money (AM = 2.36). Based on this, it can be concluded that respondents believe that free samples are more effective in creating the first group of responses in their behaviour than the other one.

Rewards – One-factor ANOVA of repeated measurements showed that there is a significant statistical difference between responses in the behaviour of respondents to the prizes (Wilks' Lambda = 0.963, $p < 0.05$). It was therefore justified to use the t-test of paired samples, which led to the conclusion that the mean values of these responses are slightly different (Table 1). According to the results obtained, we may conclude that the rewards are more efficient in encouraging respondents to accelerate the purchase (AM = 2.40), making a stock (AM = 2.35) and brand change (AM = 2.32) rather than spending more money (AM = 2.28) and product testing (AM = 2.25).

Loyalty cards – By conducting single-factor ANOVA of repeated measurements, it has been shown that there is a statistically significant difference between responses in respondents 'behaviour to loyalty cards (Wilks' Lambda = 0.950, $p < 0.05$). Therefore, t-test of the paired samples was also used to compare the mean values of these responses. The results of this test (Table 1) showed that the mean values of these responses are slightly different, so loyalty cards are seen as more efficient in encouraging respondents to spend more money than planned (AM = 2.37), making a stock (AM = 2.36) and the acceleration of a purchase (AM = 2.35), rather than the brand change (AM = 2.28) and the product testing (AM = 2.20).

Premiums – The same tests were conducted for this method of sales promotion. The results were again statistically significant (Wilks' Lambda = 0.865, $p < 0.05$). By comparing the mean response values in the behaviour of the respondents, it has been concluded that five responses in the behaviour of the respondents to the premiums can be divided into two groups (Table 1). The first group includes purchase acceleration (AM = 3.10), making a stock (AM = 3.08) and brand change (AM = 2.96). On the other hand, the second group includes product testing (AM = 2.82) and spending more money (AM = 2.80). Based on this, it can be concluded that respondents believe that premiums are more effective in creating the first group of responses in their behaviour than the other one.

Brand change – One-factor ANOVA of repeated measurements was applied to the data in Table 1 in order to determine which of the observed methods of sales promotion are most effective in encouraging respondents brand change. The results showed that there is a statistically significant difference between the impact of the observed methods on brand change (Wilks' Lambda = 0.538, $p < 0.05$). Therefore, t-test of the paired samples was also used, in order to compare the mean value of the impact of each of the observed methods for changing the brand. According to the results of this test, the effects of each of the observed methods for changing the brand can be divided into three groups. The first group consists of the impact of discounts (AM = 3.13), premium (AM = 2.96) and bonus packages (AM = 2.90), second group of influences of free samples) and demonstration and product testing (AM = 2.60), while the third of the effects of rewards (AM = 2.32), coupons (AM = 2.28) and loyalty cards (AM = 2.28)

Acceleration of the purchase (impulsive behaviour) – One-factor ANOVA of repeated measurements showed that there is a statistically significant difference between the impact of the observed methods on the acceleration of a purchases (Wilks' Lambda = 0.350, $p < 0.05$). Therefore, based on the t-test of the paired samples, it was concluded that the discounts (AM = 3.71), the bonus pack (AM = 3.38) and the premium (AM = 3.10) were the most influential in the acceleration of the purchase, compared to other methods (Table 1).

Making a stock – The same tests have been conducted for this type of behavioural response. The results were again statistically significant (Wilks' Lambda = 0.336, $p < 0.05$). Based on the results obtained (Table 1), it can be concluded that bonus packages (AM = 3.46) and discounts (AM = 3.42) are the most influential in making a stock, unlike other methods.

Product Testing – According to the results of single-factor ANOVA of repeated measurements, it can be concluded that there is a statistically significant difference between the impact of the observed methods on the product test (Wilks' Lambda = 0.571, $p < 0.05$). Therefore, t-test of paired samples was also used, in order to compare the mean value of the impact of each of the observed methods in the product testing. According to the results of this test (Table 1), the effects of each of the observed methods of product testing can be divided into three groups. The first group consists of the influence of the discount (AM = 3.06), premium (AM = 2.82) and demonstration and product testing (AM = 2.78), the second group from the influence of bonus packages (AM = 2.72) and free samples (AM = 2.66), while the third one of the coupon influence (AM = 2.28), prize (AM = 2.25) and loyalty card (AM = 2.20).

Spending more money – The one-factor ANOVA of repeated measurements showed that there is a statistically significant difference between the impact of the observed methods on spending more money (Wilks' Lambda = 0.387, $p < 0.05$). Therefore, based on the t-test of the paired samples (Table 1), it was concluded that discounts (AM = 3.47) and bonus packages (AM = 3.17) are the most influential in spending more money, unlike other methods of sales promotion, in which the mean value of their impact on spending more money is considerably lower.

Based on the presented results, a conclusion can be drawn as to which of the defined sales promotion methods are most effective in creating a specific response in respondents' behaviour during the purchase. Therefore, by observing the last line in Table 1, it can be seen that discounts (average mean value = 3.36) are the most effective method of sales promotion in creating most responses in consumer behaviour. They are followed by bonus packages, as the second most effective method in creating most responses in respondents' behaviour (average mean value = 3.13). Premiums (average mean value = 2.95) are ranked as third. Although this average mean value is lower than 3, the premiums are effective in creating three responses in the behaviour of the respondents. Free samples (average mean value = 2.53) were ranked as the fourth most effective method, mainly in encouraging consumers to change their brand and product testing. The fifth most effective method is demonstration and product testing (average mean value = 2.47). On the sixth place are rewards (average mean value = 2.32), while slightly lower average mean value (2.31) is recorded for loyalty cards. According to the results of the survey coupons are highlighted (average mean value = 2.29) as the most inefficient method of sales promotion in creating all five responses in the behaviour of respondents.

5. Conclusion

In this paper, the efficiency of the observed methods of sales promotion in creating defined responses in consumer behaviour has been evaluated by using the analysis of variance (ANOVA) and t-test. The results showed that according to the respondents' point of view discounts, bonus packages and premiums are the most effective methods in creating the majority of responses in consumer behaviour. The reason for this belief emerges from the fact that these sales promotion methods are relatively easy to understand and that consumers can clearly assess the benefits they receive from the purchase. This also confirms the results of previous studies (Gilbert and Jackaria, 2002; Osman *et al.*, 2011; Shi *et al*., 2005; Rotimosho, 2003 and Obeid, 2014). On the other hand, other sales promotion methods have been assessed as less efficient or ineffective in creating responses in consumer behaviour. Observing individually, free samples were ranked fourth in efficiency. They are the most effective in encouraging consumers to test products, change brands and accelerate purchases. Demonstrations and product testing (as the fifth method for efficiency) are useful for promoting new products or brands, as well as encouraging customers to test products and accelerate purchases. This confirmed the results of the study by Shi *et al*. (2005). When it comes to rewards, it is not surprising that respondents find it less effective in creating all five responses in their behaviour. These results were also obtained by Obeid (2014). Loyalty cards (as the latter) are most effective in motivating consumers to spend a larger amount of money than planned, as well as making inventory and speeding up purchases. In the end, coupons are among the most effective methods for improving consumer-oriented sales rated as the most ineffective in creating all five responses in the behaviour of respondents, as shown by the results of the research so far (Gilbert and Jackaria, 2002; Ndubisi and Chew, 2006 and Osman *et al.*, 2011). The reason for this claim may come from the fact that consumers first have to make a minimum purchase of a particular product, which they may not need at a given moment, in order to take advantage of the benefits that the coupon brings. Based on these results, it can be concluded to some extent which method of sales promotion is most effective in motivating consumers to accelerate their purchases. In this case, these are discounts.

Despite the fact that the results of this study coincide with the aforementioned research studies conducted in this and the previous decade, certain differences and variations are evident in the conclusions of these studies as well as in comparison to this study. The authors assume that these differences arise due to the variety of different markets, as well as cultural differences between different countries. For this reason, the authors suggest and plan the implementation of a study which would closely connect this type of research with the Hofstede's expanded cultural dimension theory (Hofstede, 2010) in order to make a model for different countries of the same region (e.g. South East Europe) or a continent.

This study has limitations due to the fact that the sample is not representative and that local culture most probably influences the consumers, but despite these limitations, the results of this study provide an empirical framework as a reference for further research. Furthermore, the results of this study can be useful to sales and brand management of different orientations.

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Human Resources, Financial Resources and Strategic Performance: Organisational Policy as Moderator

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Abstract

The paper examined the direct relationship and the moderating effect of organizational policy in the relationship between human resources, financial resources and strategic performance. The survey method was used to collect data from employees of all the four multinational firms operating in the mobile telecommunication sector in Nigeria. Quantitative method was used to analyse resultant data. The results suggest that human resources and financial resources contributes positively and significantly to strategic performance. Additionally, organizational policy moderates the relationship between human resources, financial resources and strategic performance. The data used were collected from mobile telecommunication firms in Nigeria which limits the generalization of these findings beyond this context. Future studies should explore tangible, intangible resources and capabilities in other sectors such as manufacturing, financial institutions among others, and in other countries. Drawing on the resource-based view and the contingency perspective, the study provides useful insights on the moderating effect of organisational policy in the relationship between human resources, financial resources and strategic performance in the African context.

Keywords: *human resources; financial resources; strategic performance; resource-based view; organisational policy.*

1. Introduction

In recent years, firms are faced with the challenges posed by intense competition, globalization and technological development. In this context, efficient utilization of human resources and financial resources can allow firms to adapt to such conditions. In some countries, such as Nigeria, where the business environment is volatile and relatively unpredictable, managers need to optimize their human resources and financial resources to adapt to unprecedented changes. Human resources (Rose & Kumar, 2007; Adner & Helfat, 2003) and financial resources are important resources that enable a firm to deliver superior business performance. Arguably, human resources coordinate other types of resources. Firms with strong financial resources have the capability to acquire other strategic resources or assets that can give them a competitive edge, if they are well managed. Human resource strategic management refer to a firm's ability to use its people to create competitiveness and achieve strategic objectives. Prior studies show that human resources could have a positive impact on firm performance in dynamic environments (Morgan et al., 2004; Datta et al., 2005; Ainuddin et al., 2007; Sorooshian et al., 2010; Ologunde et al., 2015). Most of these studies used financial indicators to measure performance (e.g., Sorooshian et al., 2010; Ologunde et al., 2015). Financial resources such as cash-in-hand, bank deposits and/or savings and financial capital (e.g. stocks and shares) also help to explain firm performance (Ainuddin et al., 2007; Morgan et al., 2004). Some empirical evidence in the literature found a positive relationship between financial resources and performance (e.g., Rehman et al., 2015; Adomako & Danso, 2014). Nonetheless, the findings into the possible connection between human resources and financial resources have not been fully examined in term of its impact on strategic performance. Arguably, there is a direct relationship between human resources, financial resources and strategic performance. Additionally, the authors propose that firms need to develop and implement robust organisational policies to enable them effectively use their human and financial resources. In so doing, they can achieve better strategic performance. Specifically, the moderating role of organisational policy in the relationship between human resources, financial resources and strategic performance is relatively unclear. The authors argue that the relationship between human resources, financial resources and strategic performance may depend on the policies of the organisation. Guidelines, rules, and procedures support the optimization of human resources, and financial resources, which in turn impact positively on strategic performance. In the light of the above, organisational policy is introduced as a moderator in this study. Contextually, the study focuses on multinational firms operating in the mobile telecommunication sector in Nigeria. The mobile telecommunication sector contributed 9.13 percent to Nigeria's Gross Domestic Product, (GDP) in 2016 (Nigerian Communications Commision, 2017), and attracted highest foreign direct investment $35 billion (NCC, 2017). The authors attempt to fill the gap in the literature by exploring the direct relationship between human resources, financial resources and strategic performance, and the moderating role of organisational policy in the relationship in multinational firms operating in the mobile telecommunications sector in Nigeria. In fact, few studies have examined human resources, financial resources and strategic performance in the multinational mobile telecommunication sector in the Nigeria context. In this study, the authors used strategic performance to operationalize performance (Santos & Brito, 2012). Moreso, in the developed economies where some studies have been done, no study has explored the moderating role of organizational policy in the relationship between human resources, financial resources and strategic performance in multinational firms operating in the mobile telecommunication industry.

2. Literature Review

The contingency perspective allows for interaction effects and varying relationships depending on the presence of a contingent variable. Contingency theory suggests that contextual factors play an important role in explaining the effectiveness of a given 'structure' (Birkinshaw et al., 2002). Contingency perspective may be useful to explore specific effects of organizational policy on human resources, financial resources and strategic performance. The relationship between human resources, financial resources and strategic performance may be improved or restricted by policies of the firm. The contingency view has been used in both theoretical and empirical studies to examine strategic flexibility, CEOs gender and firm performance (Xiu et al., 2017) board effectiveness and firm performance (Nicholson & Kiel, 2003); strategic flexibility, innovative HR practices and CEOs gender performance (Xiu et al., 2017); corporate innovation and firm size (Damanpour, 2010). Arguably, contingency approach and the related analysis of moderating effects provide an appropriate theoretical lens to examine how organizational policy affect human resources, financial resources and strategic performance. Empirical evidence in the literature showed that the resource-based view (RBV), has been used to examine unique and valuable pool of human capital and performance (Beltran-Martin et al., 2008; Zheng et al., 2009); competitive value of innovation strategies and business performance (Terziovski, 2010; Cheng et al., 2014; Wang, 2014); strategy formulation process and innovation performance (Nwachukwu et al., 2018); human resources as a source of sustainable competitive advantage (Huselid, 1995; Kamoche, 1996). The resource-based view states that the internal resources that are owned and controlled by a firm are a source of competitive advantage (Wernerfelt, 1984). If a firm possesses resources that are valuable, rare, non-imitable, non-substitutable, non-transferable, and the firm has the organizational capability to exploit these resources, it could lead to a sustainable competitive advantage (Barney, 1991). Human resources and financial resources that valuable, rare, difficult to imitate and substitute for, are strategically important to achieve the firm's strategic objectives. In this context, the RBV is concerned with linking human resources and financial resources to the strategic performance of the mobile telecommunication firms in Nigeria. Arguably, in terms of strategic performance, the effective and efficient utilization of human resources and financial resources may increase the firm's capacity to create new products, services, process, expand both existing and new markets and acquire other strategic resources. This may enhance customer satisfaction, increase in sales volume and strategic performance.

2.1. Human Resources and Business Performance

Human resource (HR) is one of the most important assets that can help firms achieve and sustain competitive advantage. Human resource is a bundle of education, employment or industry experience that enable firms to deliver superior performance. Human resources consist of personnel available to formulate and implement a firm strategy (Barney, 1991). Human resources need to be properly managed to ensure that only competent people are trained and developed. Prior research suggests that innovative HR practices are positively associated with organizational performance (e.g. Messersmith et al., 2011; Zheng et al., 2009); people management is a key source for improving employee satisfaction (Nwachukwu & Chladkova, 2017); firm's strategy and the use of human resources (Lee et al., 2010); human resources and performance (Lee et al., 2010; Ahmad & Schroeder, 2003); attention to human resource management and financial performance (Sorooshian et al., 2010) strategic HRM profitability and market share of the SMEs (Ologunde et al., 2015). Shigang & Guozhi (2016) investigated the relationship between core capability and international performance of Chinese construction firms. It was observed that HR management capability has a significant positive relationship with the performance of Chinese construction firms. Muogbo (2013) found a strong positive correlation between SHRM and performance level of competition in SMEs in Nigeria. Similarly, Yuan-Yao et al. (2009) found a positive relationship between human resources and performance of Taiwan's IC design industry. In view of the above, we hypothesize that;

H1: Human resources is positively related to strategic performance.

2.2. Financial Resources and Business Performance

Firms may optimise their financial resources to maximize profits (Inmyxai & Takahashi, 2010) and remain competitive. Financial resource is an important driver of superior business results because it supports the acquisition of other strategic resources and assets. Arguably, access to financial resources support firm's strategic efforts, sustainable growth, performance and as well as innovative activities. Danso & Adomako (2014) underscores the importance of financial resources as one of the factors that drive the operations of firms. Hence, it becomes important for firms to take optimal financing decisions to survive in a competitive and dynamic business environment. Firms need sufficient financial capital that can easily be converted into other types of resources (Dollinger, 1999), to support the implementation of internal growth strategies and also to gain a competitive advantage through superior returns (Barney, 1986). Financial resources of a firm include among others, financial liquidity, operating funds, borrowing capacity and the ability to generate internal funds is crucial for firm survival and profitability. Cooper et al. (1994) observed that financial capital availability support the implementation of new strategies, practices and new growth opportunities. Indeed, financial resources constraints can hinder the development and introduction of innovative products and services to the market and strategic performance. Furthermore, it may be difficult to pursue resource-intensive growth strategies and experiment with innovative projects and new strategies in a resource-constrained environment (Mousa, 2009; Cyert & March, 1992). Neneh (2016) found that while SME has low levels of financial literacy and availability, financial literacy has a positive effect on SME performance and that the relationship is positively moderated by financial capital availability. Shigang & Guozhi (2016) found that financial capability is positively related to the performance of Chinese construction firm. Othman et al. (2015) found that the availability of current assets is significantly and positively related to performance as measured by only gross profits. Furthermore, the availability of business finance is significantly and positively related to performance as measured by gross profit, net profit and total reserves. Drawing on the RBV, Adomako & Danso (2014) examined the direct relationship between financial literacy and firm performance and the moderating role of resource flexibility and financial capital availability on the relationship between financial literacy and firm performance. They observed that financial literacy has a positive relationship with firm performance, financial capital availability positively moderates the relationship between financial literacy and firm performance, and resources flexibility positively moderates the relationship between financial literacy and firm performance. Similarly, Clarke et al. (2010) find a positive relationship between financial capital and firm performance. Nonetheless, there are very few studies on financial resources performance nexus in Nigeria. In light of above, the authors contend that effective and efficient use of financial resources will have a positive impact on strategic performance.

H2: Financial resources is positively related to strategic performance.

2.3. Human Resources, Financial Resources, Strategic Performance and Moderating Role of Organisational Policy

Firms need to take strategic decisions on how to use scarce resources to remain competitive (Nwachukwu et al., 2018). The effectiveness of human resources and financial resources depend on how well they mesh with other aspects of the firm. The contingency perspective draws a causal relationship from organisational policies to the strategic performance metrics. Organisational policies are established to guide managerial thinking and decision making that relates to utilising resources, developing and deploying capabilities that give firms a competitive edge. Policies are important for the effective and smooth running of firms, they set boundaries, constraints, and limits on the kinds of administrative actions that can be taken to reward and sanction behaviour. Arguably, organizational policies provide a basis for management control, delegation of decision-making, allow coordination across organizational units and facilitate rapid decision-making. Past studies have examined the relationship between human resource policies, financial policies and performance. For instance, the impact of HRM policies on commitment, productivity, profitability, and quality, among others (Demo et al., 2012; Kim & Lee 2012); financial policy (Salawu et al., 2012; Akhigbe & Madura 2008; Bokpin & Abor, 2009). Most of these studies found a positive relationship between organizational policies and firm performance. Arguably, organizational policies support efficient and effective utilisation of human resources and financial resources. Furthermore, organizational policy may improve or restrict the impact of human resources and financial resources on strategic performance. In order to understand the relationship between human resources, financial resources and strategic performance, it is important to consider the role of organizational policy in the relationship. Specifically, the effect of human resources and financial resources on strategic performance may depend on a robust organisational policy. Arguably, the stronger the organizational policy support, the stronger the impact of human resources and financial resources on strategic performance. In the literature, no study though, have explored the moderating effect of organizational policy in the relationship between human resources, financial resources and strategic performance. In this context, the authors argue that the relationship between human resources, financial resources and strategic performance will be enhanced with a robust organizational policy. We hypothesized that:

H3: Organizational policy moderates the impact of human resources on strategic performance

H4: Organizational policy moderates the impact of financial resources on strategic performance

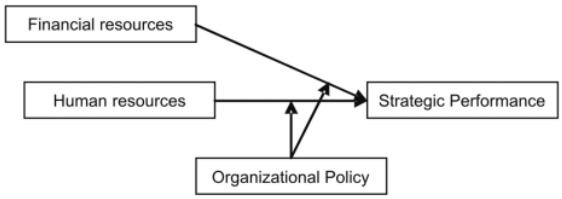

Figure 1. Conceptual model showing the relationship between the research variables
Source: Authors work, 2017

3. Methodology

3.1. Participants and settings

Questionnaires were sent to 120 employees drawn from sales, marketing, finance/audit, customer service and engineering departments of all the four multinational firms operating in the Nigerian mobile telecommunication sector. The respondents were selected from the sample firms head offices and eight regional offices across the country whose portfolios were involved in strategic management and decision-making. The sample size is within the recommended sample size for a correlational study (Bryman, 2004).

3.2. Data collection

This study adopts a survey research approach. The surveys are useful methods for collecting large quantities of data from respondents (McDaniel et al., 2008) either by means of interview surveys or self-completion questionnaires. This study used a set of questionnaires and secondary data from Journals and websites. The questionnaire methods are faster, cheaper and effective means of collecting data. The instrument was designed in three main parts; Part A of the questionnaire collected data on human resources, financial resources and organizational policy. To make processing of the responses easy, we used a five-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). For human resources, two questions were used to measure whether the firms have the right number of people with the right skills, experience, qualification and competencies to plan, manage and support its strategic initiatives. For financial resources, two questions were used to assess company financial capacity to support its business operations and the management commitment to provide financial resources to support strategic initiatives. For organisational policy, four questions were used to assess the relevance of firm policies to current business activities and management support in developing and implementing the policies. Part B has used collect data on the respondents' profile. Part C assessed strategic performance using four items adapted from Santos and Brito (2012). Respondents were asked to choose, among five options, from 1 (below average) to 5 (above average) which best describes the firm overall average performance. Respondents opinions were subjectively measured based on managers' perceptions.

3.3. Procedure

A web-based survey was combined with sending emails to respondents to participate in the study (Andrews et al. 2003). The authors used the "esurvey creator" software to collect data from respondents between June 2017 and November 2017. Respondents were allowed time to complete the questionnaires at their conveniences while they remain anonymous. In addition, voluntary participation was encouraged, and the respondents were informed that they were able to withdraw from the study at any stage if they wished to do so.

3.4. Reliability/Validity test

The authors used KMO, Bartlett's test and Cronbach's alpha to test the validity and reliability of the constructs. Cronbach alpha was used to determine the internal reliability of the items in the questionnaire. Cronbach alpha shows how well the items in a set in the questionnaire are positively correlated to one another (Sekaran & Bougie, 2010). Cronbach's alpha for human resources (0.84), financial resources (0.72), organizational policy (0.79), strategic performance (0.78) and the overall scale (0.80) indicates that the measurement instrument is reliable (Zikmund et al., 2010). The questionnaire effectively measures the variables explored in this study. The KMO and Bartlett's test of sampling adequacy was significant (KMO; 0.755, P = 0.000 < 0.05) which is well above the recommended 0.5 (Hair et al., 2010).

3.5. Handling common method bias

The respondents were analysts/supervisors, lower, middle and senior managers drawn from sales, marketing, finance/audit, customer service, and engineering departments of the sample firms head offices and eight regional offices across

Nigeria. This group of employees are in the best position to provide reliable information on the subject. The validity tests performed on the constructs and their items showed that the established criteria were satisfied. The authors used a panel of six academic and non-academic experts' to review the questionnaire items in order to ascertain face validity, comprehensiveness and coherency. Evaluation apprehension was minimized by assuring to protect the respondent anonymity (Conway & Lance, 2010; Podsakoff et al., 2003). These steps ensured that the effect of common method bias was minimal.

3.6. Data analysis

Descriptive statistics were used to provide a profile of respondents' demographics. In order to test the moderating effect of organizational policy on the relationship between human resources, financial resources and strategic performance, the authors used hierarchical regression analysis. The hypotheses were tested at 0.05% significance level, with 95% confidence, which is acceptable in non-clinical research works. Statistical package for social sciences (SPSS 17) software is employed for the analyses conducted.

4. Empirical Results and Discussion

Out of 120 questionnaires administered to the respondents, 105 respondents completed and returned the questionnaires which account for 87.5% response rate. Bryman & Bell (2015), Mugenda & Mugenda (2009), suggest that a feedback rate of 50% is adequate for data analysis. In terms of the demographic profile of the respondents, the respondents were classified into four groups of age: between 25-34 years old; 35-44 years old; 45-54 years old; 55 years old and above. 36 % of the respondent's age is between 25-34 years old. More than half 62 % of the respondents were between 35-44 years old. About 2% were between 45-54 years old. There are no respondents whose age was 55 years and above. With respect to educational qualifications, 44% of the respondents have a first degree (HND/B.SC), 55% have a second degree (MBA/M.SC) and 2% have professional certifications. With regard to work experience in years, only 7.6% respondents had worked for the firms for less than five years. The results suggest that majority of the people who responded to the questionnaire had worked in the firms for 5 years and above 92.4%. Furthermore, 2% of the respondents were directors, 10% were senior managers, 45% were middle managers, 41% were lower level managers, 2% were analysts and supervisors. The sample may be considered adequate in terms of the distributions of these characteristics.

4.1. Correlation results

The results in table 1, shows that the relationship between human resources and strategic performance is positive and statistically significant (R = 0.299 p-value = 0.002). The association between financial resources and strategic performance is positive and significant (R = 0.415, p-value = 0.000).

	Human resources	Financial resources
Pearson Correlation	.299**	.415**
Sig (2 tailed)	.002	.000
N	105	105

** Correlation is significant at the 0.01 level (2- tailed)
* Correlation is significant at the 0.05 level (2- tailed)

Table 1.
Correlation results of the relationships between strategic performance, human resources and financial resources
Source: Authors work

The computed variance inflation factors values for the models range between 3.579 - 4.193 which is less than 5 (Ringle et al., 2015), shows that models are free from the problem of multicollinearity. The authors used hierarchical regression analysis to test moderating effect of organizational policy on human resources, financial resources and strategic performance (Sharma et al., 1981). Presented in table 2 is the results of the hierarchical regression model.

	R	R^2	Adj. R^2	Std error	R^2 change	F change	Sig. F change	VIF
Model 1	.299**	.090	.081	.61930	.090	10.135	0.002	
Model 2	.540**	.292	.278	.54884	.202	29.142	0.000	4.193

**Correlation is significant at the 0.01 level (2- tailed)

Model 1: Human resources
Model 2: Interaction between human resources and organizational policy

Table 2. Hierarchical regression results of the moderating effect of organizational policy in the relationship between human resources and strategic performance
Source: Authors work

Human resources have a significant and positive relationship with strategic performance (R = 0.299, p < 0.05). The effect of the interaction term between human resources and organisational policy (R = .540, **p** < 0.05) on strategic performance is significant. The R^2 change indicates the increase in variation explained by the addition of the interaction term. The results show that change in $\mathbf{R^2}$ is .202, which indicates that the impact of human resources on strategic performance increase by 20.2% when organizational policy is added as a moderator. Thus, organizational policy does moderate the relationship between human resources and strategic performance.

	R	R^2	Adj. R^2	Std error	R^2 change	F change	Sig. F change	VIF
Model 1	.415**	.172	.164	.59060	.172	21.398	0.000	
Model 2	.539**	.290	.276	.54957	.118	16.953	0.000	3.579

**Correlation is significant at the 0.01 level (2- tailed)

Model 1: Financial resources
Model 2: Interaction between financial resources and organizational policy

Table 2. Hierarchical regression results of the moderating effect of organizational policy in the relationship between financial resources and strategic performance
Source: Authors work

The relationship between financial resources and strategic performance is positive and significant (R = 0.415, p < 0.05). The effect of the interaction term between financial resources and organisational policy (R = .539, **p** < 0.05) on strategic performance is significant. The result reveals that change in $\mathbf{R^2}$ is .118, which means that the impact of financial resources on

strategic performance increase by 11.8% when organizational policy is added as a moderator. Thus, organisational policy moderates the relationship between financial resources and strategic performance.

4.2. Discussion

Firms may efficiently use their human resource and financial resource to achieve superior business results in a competitive business environment. In this study, the authors examined and tested four hypotheses. All the four hypotheses are statistically significant at 5% level of significance. The results show that human resources have a positive and significant relationship with strategic performance. This result is consistent with the findings of (Lee et al., 2010; Ahmad & Schroeder, 2003; Yuan-Yao et al., 2009; Sorooshian et al., 2010; Shigang & Guozhi, 2016; Ologunde et al., 2015) that human resources is positively related with performance. The ability of firms to earnest the skills, experience, competencies of employees could contribute to superior strategic performance. The study suggests that firms with competent human resources are able to develop and implement successful strategies which in turn impact positively on strategic performance. Thus, ***H1*** human resource is positively related to mobile telecommunication firm strategic performance is supported. Financial resources have a positive and significant relationship with strategic performance. This result is consistent with the findings of (Neneh, 2016; Shigang & Guozhi, 2016; Othman et al., 2015; Clarke et al., 2010) that financial resources/capability is positively related to performance. A well-managed financial resource can enable firms to acquire other strategic assets and resources which can contribute to achieving strategic performance. The availability of financial resources may enable a firm to secure the services of competent employees, acquire machines and equipment. Moreso, availability of adequate working capital can facilitate the smooth running of the firms and thus, improve strategic performance. Consistent with expectation, ***H2***, financial resources is positively related to mobile telecommunication firm strategic performance is supported. Organisational policy refers to guidelines and procedures that are relevant to firm current business operations that support efficient utilization of resources and capabilities. Policy development and implementation could enhance strategic performance. In this context, implementing robust human resources and financial policies can serve as a guide for strategic decision making. The empirical results of the interaction effect between human resources and strategic performance is statistically significant. Based on the finding from the study, organizational policy moderates the relationship between human resources and strategic performance. The study suggests that impact of human resources on strategic performance is stronger when firms develop and implement policies that support efficient use of employees' skills, experiences and competencies. A robust human resources policy in the area of human resource planning, recruitment, rewards and compensation, training and development will motivate employees to put in their best which will translate to improved strategic performance. Thus, ***H3***, organizational policy positively moderates the impact of human resources on strategic performance is supported. Similarly, organisational policy moderates the relationship between financial resources and strategic performance. The interaction effect between financial resources and strategic performance is statistically significant. Thus, the effect of financial resources on strategic performance is stronger when firms develop, commit and implement policies that support efficient use of their financial resources and capabilities (e.g., working capital). Based on the findings of this study, the authors infer that, a strong organizational policy that address areas such as credit management, capital budgeting, cashflow management, working capital management, financial resources allocation decisions, expenditure efficiency and cost control among others could facilitate optimal use of financial resources, and thus support the firms's strategic objectives, which in turn impact positively on the strategic performance of the firms. This finding supports ***H4***, organizational policy positively moderates the impact of financial resources on strategic performance.

5. Conclusion

Firms should have different policies to cope with environmental uncertainty and changes. Mobile telecommunication firms in Nigeria can achieve superior strategic performance by optimizing their policies to enhance the impact of human resources and financial resources on strategic performance. The relationship between human resources, financial resources and strategic performance is positive and significant. Firms need discipline, hardworking, motivated and highly skilled managers and employees as well as financial resources to drive their strategic initiatives and improve strategic performance. Additionally, the relationship between human resources, financial resources and strategic performance is stronger when organizational policy is added as a moderator. The authors, therefore, conclude that effective utilization of human resources and financial resources are important drivers of superior strategic performance. Additionally, strong organizational policy enhance the relationship between human resources, financial resources and strategic performance.

5.1. Theoretical contribution

The study contributes to the strategic management literature by using RBV and contingency perspective to explore the relationship between human resources, financial resources and strategic performance, and to identify one construct (organizational policy) that plays moderating role in the relationship in mobile telecommunication firms in the emerging market context, first of such attempt in the African contexts. Thus, this study makes a contribution to the RBV by providing a better understanding on how human resources and financial resources affect strategic performance of mobile telecommu-nication firms in Nigeria. Additionally, the results of this study support the basic insight of the contingency theory that the impact of human resources and financial resources on strategic performance depend on organizational characteristics such as organisational policy.

5.2. Managerial implications

The empirical results suggest that managers and executives should give close attention to their firm's human resources and financial resources to remain competitive in a rapidly changing business environment. If firms are to achieve and sustain superior strategic performance, they need a strong organisational policy that supports efficient optimization of both human resources and financial resources. By recognising the impact of organisational policy on human resources and financial resources, practitioners and managers can significantly enhance strategic performance. On the other hand, if they give less attention to developing and implementing robust human resource policies, and financial resources policies, firms may fail to achieve superior strategic performance. Finally, firms should develop and implement strong policies, in the areas of recruitment, compensation, training and development, procurement, long-term financial planning, budgeting among others. Recognising these mechanisms provides support for improving strategic performance of firms.

5.3. Limitations and future research

The data used were collected from mobile telecommunication firms in Nigeria which limits the generalization of these findings beyond this context. Future studies should explore tangible, intangible resources and capabilities in other sectors

such as manufacturing, financial institutions among others, and in other countries. The study used cross-sectional data, longitudinal data should be used to establish causal relationships between the constructs over time. The study used a subjective measure to operationalise strategic performance. Other researchers should use both financial and strategic performance in a single study using both objective and subjective measures. Nonetheless, this study provides interesting grounds for further debate and empirical research.

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Are E-Government and Bureaucratic Reform Promoting Good Governance towards a Better Performance of Public Organization?

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Abstract

This study empirically examines the mediating effect of good governance on the relationships between application of e-government and implementation bureaucratic reform agenda on the performance of governmental offices in the Aceh province, Indonesia. 432 officers from all 48 governmental offices in Aceh, Indonesia were selected as the sample of study based on the purposive sampling technique. To analyse the collected data through the questionnaires' distribution, the structural equation modelling (SEM) technique was adopted. The study documented that the application of e-government and bureaucratic reform had improved the implementation of good governance principles and directly contributed to an enhancement of the public organizational performances. Additionally, the good governance partially mediated the effects of e-government and bureaucratic reform on the performance of governmental offices in Aceh, Indonesia. These findings indicate that the implementation of good governance based on bureaucratic reform and e-government has contributed to the enhancement of performance of the public organisations in Aceh, Indonesia. Thus, all policies designed to further improve the performance of public organization should be focused on the promotion of good governance practices on the basis of the application of e-government and bureaucratic reform agenda.

Keywords: *e-government; bureaucratic reform; good government governance; public organization; mediated effect.*

1. Introduction

The province of Aceh, Indonesia has become an international attention after the great tsunami hit the province in December 26, 2004. To rebuild back the province form the disastrous tsunami, international communities have provided financial aids that caused an increased flow of foreign funds into the province. Additionally, the province has been guaranteed a special autonomy by the central government one year later, as regulated in the Law, No. 11 (2006) on the Aceh Government. Aceh would receive the total funds from the central government amounting to IDR100 trillion until year of 2027 (Regional Development Planning Board, Aceh Province, 2016). Managing these foreign aids and special autonomy funds required high accountability and transparency as the basis of a well-managed public sector organization.

Realizing an increased number of funds managed by the provincial government, people of Aceh have increased their demand for having professional administration of public organization. Thus, performance of local governments has now been more under the spotlights, because people had started to question the benefits they would receive from public organizational services. These conditions support the increasing need for assessing performances of the local officers and public organization.

A survey carried out by the Ombudsman[1] of the Aceh Province (2013) on 16 governmental offices in Aceh showed that their performances were alarming. Public services provided by them to community suffered from poor performances (Acehterkini, 2014). Ministry of Administrative and Bureaucratic Reform of the Republic of Indonesia categorised the performance of the Aceh's Government with Grade C by the score of 450 (Menpan & RB, 2013). The Partnerships[2] of Indonesian Governance Index (IGI) in 2012 reported that, of 34 provinces in Indonesia, Aceh was in the 18th position with the score of 5.82 (Gatra, 2013). The low level of good governance has resulted to the poor performance of Aceh's government. This further evidence showed that the performance of public organizations in Aceh is still far from expected (Menpan & RB, 2013).

In their study, Tangkilisan (2005) identified several factors directly influencing the public organizational performance, namely: technology, inputs and physical environment quality, organizational culture, leadership, human resources, organizational structure, management policy, management information, and infrastructures. Moving towards a better performance, many public organizations have implemented e-government and reformed their bureaucracies (Weerakkody et al., 2013). The implementation of e-government based on bureaucratic reform has supported good governance (Alaaraj and Ibrahim, 2014) and, in turns, had improved the level of public organizational performance (Nofianti and Suseno, 2014).

Many other previous studies have also investigated the effect of bureaucratic reform on good governance. The

[1] Ombudsman is an authorized institution to oversee the public services provided by both private and governmental organizations (i.e., the State-Owned Enterprises, Regional-Owned Enterprises, State-Owned Legal Entity, private entities and individuals) which are partly or entirely funded from the state-, regional-, and national budgets.

[2] The Partnership for Governance Reform, better known as the Kemitraan is a multi-stakeholder organization that works with government agencies, international organizations, and non-governmental organizations to promote reform at the local, national, and regional levels. Kemitraan builds important relationships between all levels of government and civil society to enhance good governance in Indonesia.

bureaucratic reform was found to be the core effort and way to achieve good governance (Supriyatno, 2014) and its lacking become a detrimental for having good governance (Minogue, 2002). In the context of Indonesia, Nofianti and Suseno (2014) found a positive association between bureaucratic reform and implementation of good governance principles as well as the organizational performance.

However, to the best our knowledge, none of the above studies has investigated the indirect effects bureaucratic reform and e-government on the public organisation in the Aceh Province, Indonesia mediated by the variable of the good governance. Thus, to fill these existing gaps, this study empirically explores both direct and indirect effect of bureaucratic reform and e-government on the public organisation via the mediating variable of the practices of good governance principles using the structural equation modelling (SEM) and estimated by the software of the Linear Structural Relationship (LISREL) that enables us to identify complex relationships between variables (Jaccard, 1996). The findings of this study are hoped to provide some lights on the assessment of implementation of good governance principles to enhance public organizational performance and improve public trust in bureaucratic reform agenda on the basis of the e-government application.

The rest of this study is organized in the following sequences. Section 2 highlights the selected previous studies on the issue of public sector performance and its determinants. Section 3 provides the research framework on which the analysis is made. Section 4 reports the finding and its discussion. Finally, Section 5 concludes the paper.

2. Selected Literature Survey

According to the *Qanun* of Aceh (Law), No. 15 of 2012, Aceh Government consists of 48 governmental working units, located in Banda Aceh, the capital city of the province of Aceh. The governmental working units have executive duties and functions to perform mutual coordination and ensure the good practices of governance government. To provide better quality of public services, they should produce high performance achievement. In Indonesia, the basis for measuring the performance of government agencies was stipulated in the Decree of the Head of Institute of Public Administration, No. 239/IX/6/8/2003 on the Guidelines for Preparation of Reporting the Accountability of Government Performance. Based on this decree, the performance of public sector would not be achieved without the implementation of good practices of governance principles.

According to the United Nation Development Program (UNDP, 1997), good governance is the exercise of economic, political, and administrative authority to manage a country's affairs at all levels. It comprises mechanisms, processes, and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations, and mediate their differences. In doing so, there were several factors that need to be focused, namely: (i) man, (ii) public participation, (iii) funding or budgeting, (iv) tools, and (v) organization and management (Kalsi et al., 2009).

To support good governance in the province of Aceh, the government has issued the *Qanun*, No. 12 of 2003 concerning the Medium Term Development Plan of Aceh, 2012-2017 as the derivation of Regulation of the President of the Republic of Indonesia, No. 81 of 2010 concerning the Grand Design of Bureaucratic Reform, 2010-2025 and the Regulation of the Ministry of Administrative and Bureaucratic Reform, No. 20 of 2010 concerning the Road Map of Bureaucratic Reform, 2010-2014. Specifically, the establishment of efficient and effective government; human resource personnel are competent and competitive; open government, high quality of services, free of corruption, and accountable governance are among the agenda intended to be achieved by the reformation of bureaucracy.

Apart from the bureaucratic reform agenda, to enhance the quality of public services and increase efficiency and transparency, the implementation of e-government was proven to be very beneficial. The term of e-government in public sector means a set of concepts of acts in public sector (both in central and regional governments) which involves technology of information and telecommunication to optimize the processes of public services efficiently, transparently, and effectively. These are possible since information exchanges internally between units of public organization become faster, easier, and integrated.

According to the Ministry of Communications and Information, Republic of Indonesia (2002), the implementation of e-government is an effort to develop electronic-based governance to improve the quality of public services. The standards of e-government describe how the government works, shares information, and serves internal and external stakeholders using technology of information and communication (Elbahnasawy, 2014; and Cordella and Tempini, 2015). Its application is expected to reduce corruption, increase transparency and time efficiency, increase revenues, and reduce costs (Krishnan et al., 2013; Sun et al., 2014; and Lupu and Lazăr, 2015).

E-government involves the use of communication and information technology to facilitate the interactions between the government and society, businesses, and between government's units (Joseph, 2013). The initiative of implementing e-government in Indonesia was introduced through the Presidential Instruction, No. 6 of 2001 on the Telematics to support good governance and accelerate the process of democracy (Karunasena and Deng, 2011). Thus, the implementation of e-government aims to simplify and increase transactions between public services and society. In the most major cities of developed countries, the political parties have attempted to promote e-government development dynamically (Álvarez et al., 2010; and Rodríguez et al., 2011). In Indonesia, however, most of the implementation of e-government was only at the stage of publication through websites. In 2002, 369 government offices have created their own websites, but 24% of those websites were failed to be well-maintained due to the limited budgets, and only 85 sites were operating with complete choices. E-government is not just a web site publication, but the delivery of services to the full phase-electronic delivery service is also necessary for the success of good governance (Layne and Lee, 2001; and Nam, 2014).

As for the effects of e-government, the former Presidents of the USA and the UK, Al Gore and Tony Blair (Organ, 2003; Joint, 2005) stated that the advantages of its implementation are to improve the quality of government service for stakeholders, to improve transparency, control and governance accountability to implement the concept of good governance, to reduce total administrative costs, to gain new sources of revenue through their transactions with interested parties, to create a new community environment in line with the global changes and existing trends; and to empower the community and government's partners in the public policy making process democratically.

Based on the above review of literature, the study proposes the following hypotheses:

1. There is a significant effect of e-government on good government governance of the governmental office in Aceh, Indonesia.
2. There is a significant effect of bureaucratic reform on good government governance of the governmental office in Aceh, Indonesia.
3. There is a significant effect of e-government on performance of the governmental office in Aceh, Indonesia.
4. There is a significant effect of bureaucratic reform on performance of the governmental office in Aceh, Indonesia.
5. There is a significant effect of good government governance on performance of the governmental office in Aceh, Indonesia.
6. There is a significant mediated effect of good governance on the influence of e-government on the performance of

governmental office in Aceh province, Indonesia.

7. There is a significant mediated effect of good governance on the influence of bureaucratic reform the performance of governmental office in Aceh province, Indonesia.

3. Research Methods

This study investigates all 48 governmental offices in the Province of Aceh, Indonesia. Top and middle officers of each unit including the Departments/Agencies/Secretariats within the province were selected using the probability of purposive sampling method. These officers included Echelon III and IV, Head of Department, Secretary, Heads of Divisions and Heads of Units. On the average, nine officers from each unit were selected, totalling 432 respondents. These selected respondents are believed have a vast knowledge on the practices of good government principles, application of e-government and bureaucratic reform agenda carried out in their offices. The number of sampling selected in the study was representative enough and fulfil the sample size for the SEM analysis. Hair et al. (2012) argued that if the samples are more than 400, it would produce a robust finding. To gather the data, this study distributed questionnaires to all 432 respondents.

3.1. Operationalization of the variables

Each statement in the questionnaire is measured by interval measurement scale with the 1-5 Likert scale. Score 1 is given for strong disagreement, 2 for disagreement, 3 for less agreement, 4 for agreement and 5 for strong agreement. The variables investigated in this study were measured as follows:

a. Organizational Performance: Mahsun (2006) defined performance as a reflection of achievement levels of implementation of activities/programs/policies to realize goals, objectives, visions and missions of organization contained in organization's strategic plan. Based on this definition, the organizational performance was measured by input, process, output, outcome, benefit, and impact. In totality, 14 indicators were used, consisting of 4 indicators for input, namely: funds availability, number of workers, infrastructures, and time. Meanwhile, the indicators of process consist of 2 items, namely: laws and regulations, and efficiency. The indicators of output consist of 2 items, i.e., goods and services, and procurement. The indicators of outcome consist of 2 items, i.e., the quality of goods and services, and productivity. The indicators of benefit consist of 2 items, namely: the level of easiness and society's participation. Finally, the indicators of impact also consist of 2 items, i.e., society's welfare and society's revenues.

b. Good Governance: United Nation Development Program (UNDP) defined it as the exercise of economic, political, and administrative authority to manage a country's affairs at all levels. It comprises mechanisms, processes, and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations, and mediate their differences (UNDP, 1997). Thus, the indicators to measure good governance consists of 8 items, i.e., accountability, transparency, responsiveness, equitability and inclusiveness, effectiveness and efficiency, the rule of law, participative, and consensus-oriented.

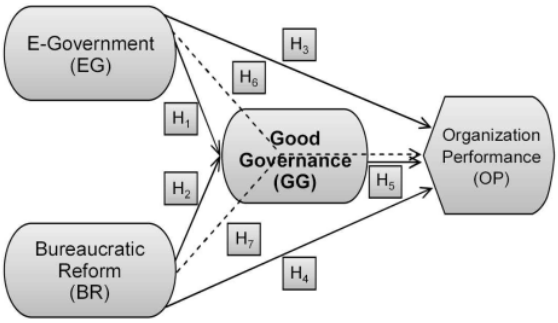
c. E-government: The Ministry of Communications and Information (2002) of Indonesia defined it as an effort to develop electronic-based governance in order to improve the quality of public services effectively and efficiently. This study measures e-government using the indicators of developed by the Indonesian e-Government Rating Agency of the Directorate General of Telematics Applications, Ministry of Communications and Information of Indonesia, comprising 5 dimensions: 1) policy; 2) institutional; 3) infrastructure; 4) application; and 5) planning. In totality, 21 items are used. The indicators of policy consist of 4 items, i.e., policy related to commutation and information technology, the policy related to information and communication technology (ICT) implementation, documents of decree/regulations/guidelines, and implementation of ICT. The indicators of institutional consist of 4 items, namely: competency and responsibility, supporting staff, development of ICT, and training program. The indicators of infrastructure consist of 4 items, i.e., communication networks, software and hardware facilities, standard of procedures, infrastructure maintenance, and supporting facilities. The indicators of application consist of 5 items, namely: administration management and public services, web-phone-sms and others-based data centre and service delivery channel, supporting data for regional planning, procurement, project management and evaluation, public complaints and publication of government information, updated facilities, The indicators of planning consists of 3 items, i.e., planning process for development and use of ICT, assessment of needs, and ICT implementation strategies.

d. Bureaucratic Reform: The Ministry of Administrative and Bureaucratic Reform, Republic of Indonesia (2013) defines bureaucratic reform as an effort to reform and change fundamentally the system of governance especially concerning institutional aspects (organization), management (business process) and human resources. 9 indicators were used to measure bureaucratic reforms, namely: 1) Anti-corruption culture, 2) Non-violation of laws, 3) Regional Budget, 4) variety of programs, 5) Services oriented-duty, 6) Communication, 7) working hours, 8) Rewards and punishment, and 9) pro-growth, pro-jobs, and pro-poverty-reduction.

3.2. Data analysis technique

To analyse the data, the multivariate technique of structural equation modelling (SEM) was adopted in this study and analysed using the Linear Structural Relationship (LISREL) program version 8.80. The SEM is a statistical technique to analyze indicator variables, latent variables, and measurement errors (Joreskog and Sorbom, 1996). The SEM multivariate technique combines aspect for factors analysis and multiple regression and allows the tests of dependency relationships between measured variables and latent constructs simultaneously (Hair et al., 2012).

To empirically test the 7-proposed hypothesis, the following model would be examined.



Note: The solid line (→) shows a direct effect, while the dashed line (--->) indicates and a mediated effect

Figure 1. The proposed model

Prior to the data analysis, the validity and reliability tests were performed to identify the most powerful and the weakest indicators influencing the latent variables as indicated by the standardized loading factor and to ensure the consistency of indicators. The test of validity for overall suitability models is based on the product moment of Pearson correlation and the goodness of fit indices. The best suitability level is a good fit; the intermediate stage is belonging to marginal fit; and the weakest is categorized to poor fit. In this regards, the validity test was

done for 52 indicators, comprising 21-item measuring e-governance, 9-items measuring bureaucratic reform, 8-item measuring good governance, and 14-item measuring organizational performance. Meanwhile, the reliability test is conducted by identifying the correlating scores of each item in the form of statements with their scores. The correlation between items' scores and the total scores should be significant and its value to be greater than 0.70 (Hair et al., 2011) for the item to be categorized as reliable.

4. Findings and Discussion

4.1. Descriptive statistics of the respondents

Table 1 provides the descriptive statistics of the respondents. Of 432 respondents, the majority of them were men (71.5%) and the rest 28.5% was female. In term of age, majority of them were between 45-50 years old (33.10%), followed by aged between 40-45 years (28.24%), aged between 35-40 years (14.58%), aged between 30-35 years (10.42%), aged between 25-30 years (6.25), aged of at least 50 years, and aged below 25 years. In the view of educational level, the majority of staff were with bachelor degree (79.17%), followed by master degree (18.75%), and diploma degree (2.08%). This indicated that the majority staff at the public organization in Aceh, Indonesia having sufficient education level. In view of working experience, the staff were dominated by those with working experience of more than 16 years (64.58%), followed by 8-16 years (34.03%), and less than 8 years (1.39%). Finally, in term of the working position, 50.69% of them were Echelon IV and the rest 49.31% were Echelon III.

Staff Characteristics		Number	%
Gender	• Man	309	71.53
	• Women	123	28.47
Age	• < 25 years	11	2.55
	• 25 – 30 years	27	6.25
	• 30 – 35 years	45	10.42
	• 35 – 40 years	63	14.58
	• 40 - 45 years	145	28.24
	• 45- 50 years	153	33.10
	• ≥ 50 year	23	4.86
Education Level	• Diploma degree	9	2.08
	• Bachelor degree	342	79.17
	• Master degree	81	18.75
Working Experience	• < 8 years	6	1.39
	• 8 – 16 years	147	34.03
	• ≥ 16 years	279	64.58
Echelon.	• III	213	49.31
	• IV	219	50.69

Table 1. Characteristics of Respondents (Sample = 432)

4.2. Model measurement

To ensure the accuracy and consistency of the indicators in measuring the investigated variables, the study tested the validity and reliability of the indicators. Table 2 reported that all 52 indicators were valid and reliable, as indicated by the significances of each standardized loading factor (λ). The t-value or its standard error (ε) showed that the indicators were valid and reliable at least at the 5% level of significance. This showed that the all indicators could be used to measure the variables for further analysis.

E-Government (EG)				Bureaucratic Reform (BR)				Good Governance (GG)				Organization Performance (OP)			
EG	t-value	Λ	E	BR	t-value	Λ	E	GG	t-value	λ	E	OP	t-value	Λ	E
EG_1	8.75	0.67	0.55	BR_1	6.77	0.56	0.68	GG_1	8.61	0.68	0.54	OP_1	5.19	0.45	0.80
EG_2	3.27	0.44	0.81	BR_2	7.35	0.60	0.64	GG_2	8.94	0.71	0.50	OP_2	2.59	0.23	0.95
EG_3	4.41	0.37	0.86	BR_3	9.59	0.76	0.42	GG_3	9.70	0.74	0.46	OP_3	4.16	0.37	0.87
EG_4	7.39	0.59	0.66	BR_4	8.39	0.67	0.56	GG_4	4.58	0.41	0.83	OP_4	5.69	0.49	0.76
EG_5	6.47	0.53	0.72	BR_5	5.77	0.49	0.76	GG_5	7.79	0.62	0.61	OP_5	6.97	0.58	0.67
EG_6	8.98	0.68	0.53	BR_6	6.86	0.57	0.68	GG_6	9.10	0.71	0.49	OP_6	6.30	0.53	0.72
EG_7	5.54	0.46	0.79	BR_7	7.40	0.60	0.64	GG_7	9.29	0.71	0.49	OP_7	6.21	0.52	0.73
EG_8	8.08	0.63	0.60	BR_8	7.52	0.64	0.59	GG_8	8.28	0.65	0.57	OP_8	8.25	0.67	0.55
EG_9	5.35	0.44	0.80	BR_9	4.54	0.39	0.85					OP_9	8.32	0.67	0.56
EG_{10}	3.11	0.27	0.93									OP_{10}	5.83	0.50	0.75
EG_{11}	7.27	0.58	0.66									OP_{11}	6.78	0.57	0.68
EG_{12}	6.49	0.53	0.72									OP_{12}	6.06	0.52	0.73
EG_{13}	4.77	0.40	0.84									OP_{13}	3.88	0.35	0.88
EG_{14}	5.26	0.44	0.81									OP_{14}	2.95	0.27	0.93
EG_{15}	8.37	0.65	0.58												
EG_{16}	7.87	0.62	0.62												
EG_{17}	8.55	0.66	0.57												
EG_{18}	9.80	0.73	0.47												
EG_{19}	8.17	0.64	0.59												
EG_{20}	8.94	0.68	0.53												
EG_{21}	8.50	0.66	0.57												
Sum	145.34	11.67	14.21	Sum	6.19	5.28	5.82	Sum	66.29	5.23	4.49	Sum	79.18	6.72	10.58
Mean	6,92	0.55	0.68	Mean	7.13	0.59	0.65	Mean	8.29	0.65	0.56	Mean	5.66	0.48	0.76

Table 2. Standardized Loading Factor for the Instrument Test

Next, to ensure the appropriateness of the estimated model, the study conducted the goodness of fit test. Of the 10 goodness of fit indices, 7 of them were good fit, while the rest 3 were marginal fit. The 3 marginal fit indices included the X2 (Chi Square) statistics, Standardized Root Mean Square Residual (SRMR), and the Augmented Goodness of Fit (GFI), while the other 7 good fit indices comprised the Goodness of Fit (GFI), Standardized Root Mean Square Residual (SRMR), Root Mean Square Error of Approximation (RMSEA), Non-Normed Fit Index (NNFI), Normed Fit Index (NFI), Augmented Goodness of Fit Index (AGFI), Relative Fit Index (RFI), Incremental Fit Index (IFI), and the Comparative Fit Index (CFI). These are indicated by their indices which were above the cut-off value.

Although there were 3 indices shown to be marginal fit, the overall SEM models analyzed in this study could be concluded as the good fit model. It is rarely found that the all the goodness of fit indices meet all the goodness of model criteria (Verbeek, 2012), especially when the sample of the study is large (Williams et al., 2015), as for the case of our study.

4.3. Direct effects of e-government and bureaucratic reform on good governance and organization performance

Table 3 provides the main findings of interactions among the e-government, bureaucratic reform, good governance, and

organization performances. As reported in Table 3, the study found that e-government and bureaucratic reforms have a positive significant influenced on both good governance practices and performance of the governmental offices in Aceh, Indonesia at the 1% level of significance. In addition, the implementation of principles of good governance also found to improve the organization performance at the 5% level of significance.

Interactions among variables			Estimated coefficient	Critical value	P-value
Good Governance	<---	E-government	0.256***	2.732	0.008
Good Governance	<---	Bureaucratic Reform	0.635***	5.576	0.000
Organizational Performance	<---	Good Governance	0.286**	2.053	0.034
Organizational Performance	<---	E-government	0.261***	2.675	0.008
Organizational Performance	<---	Bureaucratic Reform	0.435***	2.997	0.001

Table 3. Standardized Regression Weight

Note: *** and ** indicate significance at the 1% and 5% levels, respectively

The positive influence of e-government on the implementation of good governance principles was largely contributed by the easiness and flexibilities of updating and maintaining the applications of e-government. The application of e-government has lowered the dependencies of public organization from one to another. A more benefits of interdependencies could be enjoyed by the public organizations through the availability of transparent information on the official websites, thus it consequently enhance the organization performance. However, the limited number of e-government software and hardware contributed the lowest to further improve their governances and performances. Thus, it is advised that the efforts to further enhance the implementation of good governance principles in the public organization as well as their performance should be focused on providing sufficient and updated information and commutation technology (ICT) software. For this purpose, the government should allocate proportionate budget for the offices to have the e-government software as well the cost for maintaining and upgrading the organizational websites.

The findings of importance of e-government on the improvement of governance and performance of the public organization are supported by the earlier studies such as Magno, and Serafica (2001) and Alaaraj and Ibrahim (2014). These studies confirmed that the adoption of e-government has contributed to the promotion of good governance principles of the public organization and their organizational performance.

Our study also found that the bureaucratic reform had contributed towards improving the good governance principles among the public organization in Indonesia. Well-managed budget is found to be the most influential indicator of bureaucratic reform contributing towards enhancing good governance principles, while the lacking orientation of public organization to development agenda of pro-growth, pro-jobs, and pro-poverty reduction is found to be the least influential indicator contributing to the promotion of good governance principles. This implied that budget should be well-managed and allocated proportionally to support governmental economic development program, focusing on job creation activities and poverty reduction such as empowering the small-medium enterprises in the province financially and administratively.

Additionally, the bureaucratic reform was also documented to improve public organization performance in Aceh, Indonesia. This showed that the national government agenda of improving the public sector performance has been successful at the provincial level, such as documented in the study. Our findings of the positive contribution of bureaucratic reform on good governance and organization performance are in line with many previous studies. In the context of Indonesia, Nofianti and Suseno (2014) found a positive association between the bureaucratic reform and good governance and public organizational performance.

Furthermore, the implementation of good governance has further contributed toward a better public organizational performance. The quality of services provided by the public organization to the community and its wider access has improved the level of societies' participation in the government developmental agenda. This is partly due to proportionate budget allocated to the public organization agenda in providing a better quality and wide access of government services. Overall, the inputs, process, outputs, and outcomes of the public organization have been improved contributed a more accountable, transparent, responsive, inclusive, effective, and efficient of the public organization in providing services as expected by the citizens. This finding is in harmony with the studies by Nofianti and Suseno (2014) who documented that the implementation of good governance principles has been crucial to improve public organizational performance.

4.4. Mediating effects of good governance on organization performance

Table 4 reported the findings of mediating effects of good governance on the relationships between e-government and bureaucratic reform and organization performance.

Table 4. Indirect Effects of E-government and Bureaucratic Reform on Organizational Performance

Indirect effect	Estimated coefficient	Sobel t-value
Organization performance <--- Good governance <--- E-government	0.073** (0.256 x 0.286)	1.987
Organization performance <---Good governance <--- Bureaucratic reform	0.153*** (0.535 x 0.286)	2.902

Note: *** and ** indicate significance at the 1% and 5% levels, respectively

As observed from Table 4, the good governance mediated significantly the effects both of e-government and bureaucratic reform on public organizational performance at the 5% and 1% levels of significance, respectively. However, the bureaucratic reform has dominantly affected the organizational performance through the implementation of governance principles as compared through the application of e-government. This indicates that the bureaucratic reform has played important role in promoting the organization performance on the basis of implementing principles of good governance. These findings suggest that to further enhancing their performances, the public organizations should focus on reforming their bureaucracies and enhancing the application of e-government.

5. Conclusion

The issue of low level of quality of public organizational performance and its causes have been a major concerned among the public bureaucrats in Indonesia. This study empirically examined the determinants of public organizational performance. Specifically, it attempted to measure the mediating effect of good governance on the relationships between implementation of e-government and bureaucratic reform agenda on performance of governmental offices in Aceh province, Indonesia. Three top-manager levels from all 48 governmental provincial offices in Aceh, Indonesia were selected as the sample of study using the purposive sampling

technique. Based on the structural equation modelling (SEM), the study documented that the implementation of e-government and bureaucratic affected directly the organization performance and indirectly through the implementation of good governance principles.

These findings imply that the implementation of good governance based on bureaucratic reform and e-government has contributed to the enhancement of performance of the public organizations in Aceh, Indonesia. The following suggestions could be done to further enhance organization performance, namely: (i) providing and ensuring adequate and equitable hardware and software for procurement activities among the public organization according to the needs of their roles, responsibilities, and functions; (ii) public organization agenda should be prioritized to generate inclusive development which is pro-growth, pro-jobs, and pro-poverty reduction; (iii) allocating sufficient official budget and improving its budget management to provide higher service quality for the best prosperity of the societies; and (iv) providing a wider access and opportunities for the public to get involved in the policy making decision and its implementation.

To provide wide-ranging and robust empirical findings of the mediated effect of good governance on the influences of e-government and bureaucratic reform on performance of public organization in Indonesia, future studies on this issue are suggested to cover more public organization across provinces nationwide. Exploring comparatively factors affecting the performances between public and private organizations would also provide a further contribution towards the enhancement of organization performance through sharing ideas and experiences in implementing e-government and good governance principles between those organizations.

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Internationalization Model for Increasing the Competitiveness of Local Creative Industries in ASEAN Economy Community

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Abstract

The main problem in this study is the weak performance of SMEs. This can be caused by business culture factors (market orientation and entrepreneurial orientation) as well as competitive strategy factor in SMEs. The research problem raised was how the effect of market orientation, entrepreneurial orientation, and competitive strategy on SME performance. The purpose of this study was to analyse the effect of market orientation, entrepreneurial orientation, and competitive strategy on SME performance. The research sample was 100 creative industry SMEs in Special Region of Central Java Province with business field of handicrafts (various handicrafts of silver, natural fibres, earthenware, leather, and wood) and fashion business field (various batik). Hypothesis testing used path analysis. The results show that there is a positive and significant influence between market orientation and entrepreneurial orientation on competitive strategy (differentiation, low cost, and focus strategies). Market orientation and entrepreneurial orientation have a positive effect on SME performance. Competitive strategies (differentiation, low costs, and focus strategies) have a positive effect on SME performance. Entrepreneurial orientation has a higher direct influence than market orientation.

Keywords: *entrepreneurial orientation; competitive strategy; performance.*

1. Introduction

Creative industry SMEs are SMEs that focus on the creation and exploitation of intellectual property works such as art, film and television, software, games, or fashion design and include creative services such as advertising, publishing, and design. The Indonesian government has mapped 14 creative industry sectors namely: (1) advertising; (2) architecture; (3) art and antiques markets; (4) crafts; (5) design; (6) fashion; (7) video; film; and photography; (8) interactive games; (9) music; (10) performing arts; (11) publishing and printing; (12) computer and software services; (13) television and radio; and (14) research and development.

The prospect of the development of the creative industry in the Special Region of Central Java Province is very large due to the very conducive environmental conditions for the development of creative industries, especially fashion, handicraft, and information technology. This is possible because the position of Central Java as a centre of art and culture is also supported as an education centre that able to produce creative workforce in very potential quantities. The creative industry as the main pillar in developing the creative economy sector will have a positive impact on the lives of the Central Java community considering that Central Java is undergoing a social transformation that is so fast from agriculture to semi-industry, especially the creative industry.

The growth of Central Java creative industry SMEs shows a positive trend as indicated by the increasing number of industry players from year to year. In 2015, the creative industry in Central Java was 33,882 business units, in 2016 it increased to 34,977 business units, and in 2017 increased to 36,456 business units (http://disperindag.jatengprov.go.id/v2/).

The rapid development of creative industry SMEs in terms of the quantity of business units has not been accompanied by maximum performance due to number of obstacles faced by SMEs. These constraints include, among others, SMEs have not been maximally market-oriented as in carrying out marketing activities that are still conventional and have not maximally utilized information technology to accelerate services and expand market access (Nuvriasari, 2012). Other constraints include limited production facilities, limited access to capital, HR skills, and the spirit of entrepreneurship (Wicaksono & Nuvriasari, 2012).

Given these limitations and given the important role of SMEs in the Indonesian economy, it is necessary to study efforts to improve the performance of creative industry SMEs by considering number of factors that influence them such as: competitive strategy, market orientation, and entrepreneurial orientation.

Market orientation is the most effective and efficient organizational culture in creating behaviours that are needed for the creation of superior value for customers to produce superior business performance on an ongoing basis. Market orientation has three components, namely customer orientation, competitor orientation, and inter-functional coordination (Idar, Yusoff, & Mahmood, 2012). An entrepreneurial orientation reflects the extent to which a company identifies and exploits untapped opportunities as an organizing principle within a company (Baker & Sinkula, 2009). Entrepreneurial orientation is a significant contributor to the success of the company. The concept of entrepreneurial orientation developed a multidimensional construct which includes dimensions of innovation, risk taking, and proactive attitudes (Idar & Mahmood, 2011).

Competitive strategies are intended to answer the problem of how companies must compete with competitors in similar

industries. With the existence of a competitive strategy, the company will be able to have competitive advantage compared to its competitors (Rosli, 2012). Business performance can be demonstrated through the company's success in the market. Company performance is the study of vocal phenomena in business studies but is complex and multidimensional. Performance can be characterized as a company's ability to produce acceptable outcomes (Chittithaworn, Islam, Kaewchana, & Yusuf, 2011). SME performance can be measured through: financial performance, customer loyalty, customer satisfaction, customer sustainability, and perceived performance (Mahmmod & Hanafi, 2013). The important role of market orientation and entrepreneurial orientation in influencing competing strategies and efforts to improve the performance of SMEs can be shown from the amount of previous research results. Based on the results of the study, it is explained that market orientation and entrepreneurial orientation affect the competitive strategy of SMEs (Afsharghasemi, Zain, Sambasvian, & Imm, 2013; Lechner & Gudmundsson, 2014; Mahmmod & Hanafi, 2013; Wingwon, 2012). Market orientation influences SME performance (Amario, 2008; Baker & Sinkula, 2009; Dublhlela & Dhurup, 2014; Hassim, Nizam, Talib, & Bakar, 2011; Idar & Mahmood, 2011; Olivares & Lado, 2008). Entrepreneurial orientation influences the performance of SMEs (Arshad, Rasli, Arshad, & Zain, 2014; Baker & Sinkula, 2009; Mahmmod & Hanafi, 2013; Poudel, Carter, & Lonial, 2012; Runyan, Droge, & Swinney, 2008). Competitive strategies affect the performance of SMEs (Al-Alak & Tarabieh, 2012; Chadamoyo & Dumbu, 2012; Husnah, Aisjah, & Djumadli, 2013; Yan, 2010). From number of studies, it is shown that there is a research gap which found differences in the effect of market orientation and entrepreneurial orientation on competitive strategies and SME performance.

This research is expected to provide more comprehensive results based on research gap from the results of previous research and phenomena gap that show the importance of the role of creative industry SMEs in economic activities in Indonesia that have not been accompanied by maximum performance. The purpose of this study was to analyse the effect of market orientation and entrepreneurial orientation on the competitive strategy and performance of creative industry SMEs and examine the effect of the implementation of competitive strategies on the performance of creative industry SMEs. Besides that, the results of this study can provide recommendations for strategies to encourage the improvement of the performance of creative industry SMEs.

2. Literature Review

2.1. Market Orientation

Market orientation reflects the extent to which a company creates satisfaction by meeting customer needs and desires as an organizing principle in the company (Baker & Sinkula, 2009). Market orientation is very valuable, rare, not interchangeable, and cannot be replicated perfectly, which is considered as one of the internal capabilities and resources that have the potential to create competitive advantage (Zhou, Brown, & Dev, 2008).

Market orientation contains three dimensions, namely customer orientation which consists of customer analysis and response to customers, competitor orientation which consists of competitor analysis and challenging competitor reactions, and interfunctional coordination consisting of information dissemination, data collection, and information utilization (Taleghani, Gilaninia, & Talab, 2013).

Indicators of measuring market orientation include focusing on customer satisfaction, focusing on meeting customer needs, systematic actions to create satisfaction, paying attention to after-sales services, oriented to increasing value for customers and reducing costs, and emphasizing product quality. Competitor orientation is measured through the ability to respond quickly to competitor activities, disseminate competitor information to company elements, provide information on competitors' strengths and strategies, and ownership of competitive advantage. Inter functional coordination is measured through client data ownership on operational services, answering client needs on an inter functional basis, all service functions contribute to providing superior value to customers, all staff are aware of the importance of market data, and staff in marketing and sales play a role in new product development (Liu, Lie, & Xue, 2011).

Market orientation is the principle ability and basic culture of the organization. The main purpose of market orientation is to deliver superior value to customers based on knowledge derived from customer and competitor analysis, where this knowledge is obtained and disseminated to all elements of the organization. Market orientation promotes an experimental culture and focuses on continuous improvement in corporate processes and systems (Kumar, Jones, Venkatesan, & Leone, 2011).

Market orientation is an organizational perspective that encourages three main aspects, namely: (1) efforts to systematically collect market intelligence with the main sources of customers and competitors, (2) dissemination of market intelligence to all units or departments in the organization, and (3) coordinated and comprehensive organizational response to market intelligence. Market orientation is a strategy used to achieve sustainable competitive advantage based on the creation and use of information in the organization and the selection of markets to be satisfied (Olivares & Lado, 2008).

Market-oriented business shows the extent to which the company is committed to responding, market intelligence dissemination, and market intelligence gathering that can be applied to meet the needs and desires of current and future customers, competitor strategies and steps taken, and the broad business environment (Afsharghasemi et al., 2013).

2.2. Entrepreneurial Orientation

Entrepreneurial orientation is a strategic resource of organizations with the potential to produce competitive advantages. The potential for entrepreneurial orientation and its impact on business performance depends on the role of entrepreneurial orientation as a driving force or pioneer for organizational capabilities and innovation (Poudel et al., 2012). Entrepreneurial orientation is the key to organizational success and achievement of profitability. Companies that adopt an entrepreneurial orientation will have better performance than those who do not adopt (Taylor, 2013).

Entrepreneurial orientation is very important for improving performance and competitive advantage of the company. Companies must innovate to meet the needs of potential customers, engage in new exploration, support new ideas, test and simulate creatively. All of them are efforts to produce new products, services or technological processes, and changes in technology and existing practices (Liu et al., 2011).

Entrepreneurial orientation reflects the extent to which organizations able to identify and exploit untapped opportunities. A company is said to have an entrepreneurial orientation spirit if it able to be the first in innovating new products in the market, having the courage to take risks, and always being proactive in changing demands for new products. Number of studies show that entrepreneurial oriented companies must have three main characteristics, namely innovation, risk taking, and a proactive attitude (Fairoz, Hirobumi, & Tanaka, 2010; Taylor, 2013).

Innovation reflects the company's tendency to engage in new ideas and creative processes to produce new products. Proactive refers to the extent to which a company becomes a leader or follower in being aggressive towards competitors. Risk takers are the extent to which companies are willing to make big and risky commitments.

Entrepreneurial orientation in SMEs can be studied based on 5 (five) dimensions, namely: innovation, proactive attitude,

risk taking, competitive aggressiveness, and autonomy (Arshad et al., 2014). Competitive aggressiveness shows the intensity of SMEs to increase their position beyond or defeat competitors. Autonomy is an individual or team action in convincing ideas and concepts that are being carried out until they are finished. Autonomy provides opportunities for employees to perform effectively with independence and creativity.

2.3. Competitive Strategy

Competitive strategies can be realized through low cost and differentiation strategies (Husnah et al., 2013). Low cost strategy focuses more on seizing the market at a low price through reducing production costs. Differentiation strategy is carried out by utilizing the peculiarities of the best models or qualities that are not found in other companies so that they attract buyers or markets.

A company can differentiate in various ways, such as offering innovative features, launching effective promotions, providing superior services, developing strong brand names, and so on (Li, Zhao, Tan, & Liu, 2008).

Competitive strategies that are of concern to SME entrepreneurs/businesses include: business management, human resources, marketing, innovation, and global orientation (Rosli, 2012).

Competitive strategies for SMEs can be in the form of low cost, differentiation, and innovation strategies (Afsharghasemi et al., 2013; Chadamoyo & Dumbu, 2012). Besides these strategies, SMEs can also develop competitive strategies in the form of alliance strategies (Yan, 2010). Competitive strategies for SMEs are shown through innovation, product quality improvement, and low costs.

2.4. Business Performance

Business performance is a function of the results of existing activities in a company that are influenced by internal and external factors in achieving the goals set for a certain period time. Business performance can be shown through financial performance that can be measured through the level of liquidity, solvency, and profitability. Business performance is represented through economic performance consisting of market share, premium growth, and profitability (Olivares & Lado, 2008).

In general, it is difficult to determine a single size for company performance. Subjective approaches are often used in empirical research based on the perceptions of company leaders regarding performance. One dimension that is considered appropriate for measuring SME performance is operational performance (Bayraktar, Demirbag, Koh, Totoglo, & Zaim, 2009), namely: reduction of waiting time in production, forecasting accuracy, better resource planning, better operational efficiency, reduction in inventory levels, savings costs, and more accurate financing.

SME performance can be measured through: financial performance, customer loyalty, customer satisfaction, customer sustainability, and performance received (Mahmmod & Hanafi, 2013). Measurement of business performance with an objective approach measured through economic performance or financial performance include: ROI, profit, sales, revenue growth, and market share (Baker & Sinkula, 2009; Chadamoyo & Dumbu, 2012; Dublhlela & Dhurup, 2014; Poudel et al., 2012; Taleghani et al., 2013; Wingwon, 2012).

Measurement of business performance with a subjective approach measured through non-economic performance or non-financial performance includes: market performance, market effectiveness, market dominance, service quality, customer satisfaction, productivity, market valuation, buyer power, supplier power, sales concentration, level of customer sustainability, company reputation, employee turnover, and organizational commitment (Al-Alak & Tarabieh, 2012; Baker & Sinkula, 2009; Husnah et al., 2013; Taleghani et al., 2013; Wingwon, 2012).

Business performance is seen as 2 (two) perspectives in the context of market orientation with objective and subjective measurements. Measurement of objective performance in the form of economic performance and subjective measurements related to the performance of non-economic aspects. Non-economic performance can be in the form of customer satisfaction, customer sustainability, corporate image, and employee satisfaction.

Business performance in SMEs can be measured based on the achievement of marketing and financial performance (Merrilees, Thiele, & Lye, 2010). Marketing performance includes: sales growth rate, ability to acquire new customers, mastery of market share, and the ability to increase sales. Financial performance can be measured through: the level of ability to make a profit, the rate of return on investment, and the ability to achieve overall corporate goals.

2.5. Research Hypotheses

2.5.1. Effect of Market Orientation and Entrepreneurial Orientation on Competitive Strategies

There is an influence between market orientation on competing strategies. Market orientation includes: customer orientation, competitor orientation, and coordination between functions, while competitive strategies include: innovation, quality improvement, and low-cost strategy. It is shown that customer orientation has a positive and significant effect on the overall competitive strategy. Competitor orientation has a positive and significant effect on innovation strategy and low-cost strategy. But competitor orientation does not affect the quality improvement strategy. Inter-functional coordination has a negative effect on the overall competitive strategy.

Market orientation has a significant positive effect on SME business strategies (Afsharghasemi et al., 2013). Market orientation includes: competitor orientation, customer orientation, and inter-functional coordination. Competitive strategies include: innovation strategy, differentiation strategy, and low-cost leadership strategy.

Entrepreneurial orientation in the form of dimensions of innovation is positively related to competitive strategies in the form of low-cost and differentiation strategies. However, entrepreneurial orientation in the form of risk-taking and competitive aggressiveness dimensions does not affect competitive advantage strategies (Lechner & Gudmundsson, 2014).

Entrepreneurial orientation has a positive effect on competitive strategies of SMEs (Wingwon, 2012). Entrepreneurial orientation is positively and significantly related to the performance of SMEs with a competitive advantage strategy as a mediating variable. Competitive advantage is shown through product differentiation, market sensing, and market responsiveness (Mahmmod & Hanafi, 2013).

Based on the description, the following hypotheses are proposed:

- H1 : Market orientation has a positive effect on SME's competitive strategy.
- H1a : Market orientation has a positive effect on differentiation strategy.
- H1b : Market orientation has a positive effect on low cost strategy.
- H1c : Market orientation has a positive effect on the focus strategy.
- H2 : Entrepreneurial orientation has a positive effect on SME's competitive strategy.
- H2a : Entrepreneurial orientation has a positive effect on differentiation strategy.
- H2b : Entrepreneurial orientation has a positive effect on low cost strategy.
- H2c : Entrepreneurial orientation has a positive effect on focus strategy.

2.5.2. Effect of Market Orientation and Entrepreneurial Orientation on Business Performance

Market orientation has a positive effect on SME business performance (Dublhlela & Dhurup, 2014; Idar & Mahmood, 2011; Liu et al., 2011; Olivares & Lado, 2008). Market orientation negatively affects the performance of SMEs (Hassim et al., 2011). Entrepreneurial orientation has a positive effect on SME performance (Hassim et al., 2011; Idar & Mahmood, 2011; Keh, Nguyen, & Ng, 2008; Liu et al., 2011). Runyan et al. (2008) showed that entrepreneurial orientation has a positive influence on the performance of SMEs only in "young" business groups that run businesses less than 11 years. In business groups of more than 11 years, entrepreneurial orientation has no influence on the performance of small business.

There is a positive relationship between entrepreneurial orientation and SME performance mediated by technological capabilities, innovation, and growth (Poudel et al., 2012). Entrepreneurial orientation includes: innovation, risk taking, and proactivity, while financial based performance appraisal includes: ROA, ROI, net income, and profit to income ratio.

Entrepreneurial orientation consisting of dimensions of innovation, proactivity, risk taking, competitive aggressiveness, and autonomy affects the business performance of SMEs (Arshad et al., 2014). The four dimensions of entrepreneurial orientation have a positive effect on business performance but for the autonomy dimension have a negative effect on business performance.

Partially, market orientation and entrepreneurial orientation affect the performance of SMEs, but simultaneously entrepreneurial orientation does not directly affect the performance of SMEs (Baker & Sinkula, 2009). Market orientation consisting of customer intelligence, intelligence dissemination, and responsiveness has a positive effect on SME performance. SME performance is measured by an objective and subjective approach. The objective approach through financial performance. The subjective approach is measured through the level of customer sustainability, reputation over competitors, employee turnover, and product development effectiveness.

Based on the explanation, the following hypotheses were formulated:

H3 : Market orientation has a positive effect on SME performance.
H4 : Entrepreneurial orientation has a positive effect on SME performance.

2.5.3. Effect of Competitive Strategies on Business Performance

There is a positive relationship between competitive advantage strategies consisting of cost strategy, differentiation strategy, innovation strategy, and alliance strategy on SME performance (Yan, 2010). Similar findings were also expressed by Chadamoyo and Dumbu (2012) where a joint strategy that includes cost, differentiation, and innovation strategy has a positive effect on SME performance. Competitive advantage strategies which consist of low-cost leadership and differentiation have a positive relationship with the performance of SMEs (Al-Alak & Tarabieh, 2012; Husnah et al., 2013).

Based on the explanation, the following hypotheses were formulated:

H5 : Competitive strategy has a positive effect on SME performance.
H5a : Differentiation strategy has a positive effect on SME performance.
H5b : Low cost strategy has a positive effect on SME performance.
H5c : Focus strategy has a positive effect on SME performance.

Based on the formulation of the research hypotheses, the research framework can be described as shown in Figure 1.

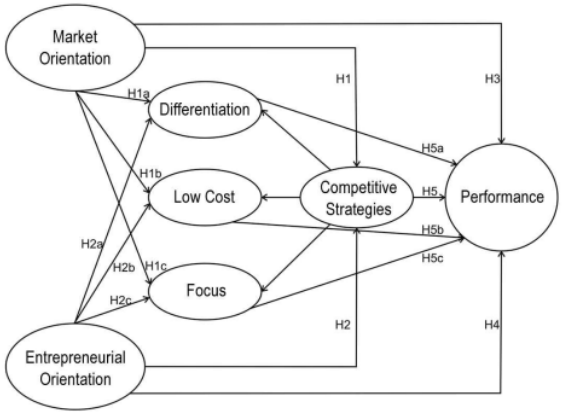

Figure 1. Research Theoretical Framework

3. Research Methods

This research is a quantitative research aimed at answering problems through measurement techniques of research variables to produce conclusions that can be generalized. Research samples are creative industry SMEs engaged in fashion and handicraft business in Special Region of Central Java Province.

The sampling technique used purposive sampling by considering certain criteria, namely:

1. The criteria for categorizing SMEs are based on Law No. 20 of 2008 concerning MSMEs.
2. SMEs are incorporated in a centre or community that engages in various handicraft businesses, which consist of various handicrafts of silver, natural fibres, pottery, leather and wood, and fashion business that consists of various batik handicrafts.

Determination of the sample size in multivariate research is the amount of sample size 10 times greater than the number of variables used in the study (Sugiyono, 2010). The number of dependent and independent variables in this study are 6 variables. In this study, the sample size used was 100 SMEs in the creative and fashion industries in the Special Region of Central Java Province.

Data collection method began with observations on creative industry SMEs to identify feasibility to become a research sample and initial data acquisition in research respondents' profiling. Based on the results of observations, carried out data collection through the distribution of questionnaires to research samples related to the assessment of market orientation, entrepreneurial orientation, competitive strategy, and SME performance. The questionnaire used open and closed model questions. The variable measurement scale used a 4 (four) tiered Likert scale with no good criteria (score 1) until well (score 4).

The variables in this study include market orientation, entrepreneurial orientation as independent variable, competitive strategies (differentiation, low costs, and focus strategy) as the intermediate variable, and the performance of SMEs as the dependent variable.

Market orientation is a business culture that produces superior performance through its commitment to creating superior value for customers, which is developed through customer orientation, competitor orientation, and inter-functional coordination. In this study, the indicators developed for each market orientation dimension are adopted from a number (Idar & Mahmood, 2011; Idar et al., 2012) indicators of customer

orientation dimension include: customer satisfaction orientation, meeting consumer needs and desires, monitoring the market environment/conditions, and service standards. Indicators of competitor orientation dimension include: response to competitor attacks, specific strategies to overcome competition, competitive pricing, and product acceptance in the market. Inter-functional coordination indicators include: dissemination of market information, support for human resources for marketing and product development, coordination between units with consumer orientation, and commitment of all human resources to customer satisfaction creation.

Entrepreneurial orientation is a multidimensional construct which includes dimensions of innovation, risk taking, and proactive attitudes. In this study, indicators for each dimension of entrepreneurial orientation were adopted from number of studies (Fairoz et al., 2010; Idar & Mahmood, 2011; Keh et al., 2008). Indicators of the dimension of innovation include: creativity and initiative, attention to market research, technology and innovation, different new product variant/types in the last 3 years, product design and packaging renewal, and renewal of production processes/new products/new services. Indicators of the dimension of risk taking include: readiness to face situations of business uncertainty, the ability to take account risks, responsibility for risks that arise, and courage to act to maximize the potential opportunities that exist. Indicators of the dimension of proactive attitudes include: confidence in running a business, a pioneer in introducing new products, proactively responding to market desires, and activeness in fostering partnership with other parties.

The concept of competitive strategy is developed through strategies for the creation of competitiveness/competitive advantage, namely: cost leadership, differentiation, and focus strategy. Competitive strategy indicators are developed from number of studies (Afsharghasemi et al., 2013; Suci, 2009; Yan, 2010). Indicators of differentiation strategy include: the intensity of introducing new products, the uniqueness of products, products not easily replicated, developing the identity/brand of a business/product with certain characteristics, and offering different prices with other SMEs. Low cost strategy indicators include: lower production costs, emphasis on business efficiency and productivity, optimizing the use of production facilities and infrastructure, producing cost-efficient products, using low-cost raw materials, and utilizing low-wage labour. Focus strategy indicators include: serving certain segments or market groups, focusing on producing certain products, focusing on serving certain market areas, and focusing on serving certain customers.

The performance of SMEs is the process and results of work on the ability to manage resources, where performance can be measured through objective and subjective performance. In this study, performance measurement is measured through subjective performance grouped in marketing, financial, and operational performance. Measurement of marketing and financial performance was adopted from number of studies (Merrilees et al., 2010). Operational performance measurement was adopted from research of Bayraktar et al. (2009). Marketing performance indicators include: the level of sales growth, the ability to acquire new customers, mastery of market share, and increased sales that are better than existing customers. Financial performance indicators include: ability to make a profit, return on investment, and achievement of financial goals. Operational performance indicators include: reduction of waiting time in the production process, ability to plan and allocate resources, and operational efficiency in running a business.

Data analysis techniques in this study are quantitative analysis by using descriptive and inferential statistical tools. Descriptive statistics are used to provide an overview of the sample and research variables by using the frequency distribution model and the mean. Inferential statistical tools in this study used path analysis, namely the analysis of causal models of independent variables (exogenous), intermediate variables (endogenous), dependent variables (endogenous), and all measured variables. The path analysis application in this study is the development of the Multiple Regression Analysis (MRA). Path analysis is intended to analyse the causal relationship that occurs in multiple regression if the independent variable affects dependent variables not only directly but also indirectly.

4. Analysis and Discussion

4.1. Profiling Sample of Creative Industry SMEs

The sample in this study consisted of 100 creative industry SMEs in Central Java which were divided into craft businesses (various handicrafts of natural fibre, silver, earthenware, leather, and wood) as many as 70 SMEs and fashion businesses (various batik) as many as 30 SMEs. The research sample profile can be shown in the table 1.

No.	Profile of SMEs	N	Percentage
1	Business history:		
	Heritage	51	51%
	Self-pioneering	49	49%
2	Number of HR (people):		
	5-19	66	66%
	>19	34	34%
3	Business legality:		
	Incorporated company	1	1%
	Limited partnership	12	12%
	Not yet	87	87%
4	Marketing area:		
	Domestic	57	57%
	Overseas	43	43%
5	IT utilization:		
	User	60	60%
	Have not used	40	40%
6	SME assets (Rp):		
	50 million - 500 million	100	100%
	500 million - 2.5 billion	0	0%
7	Sales/year		
	300 million - 2.5 billion	100	100%
	2.5 billion - 50 billion	0	0%

Table 1. Profiling Sample of Creative Industry SMEs
Source: Processed Data, 2015

4.2. Assessment of Market Orientation, Entrepreneurial Orientation, Competitive Strategies, and SME Performance

Assessment of market orientation, entrepreneurial orientation, competitive strategy, and performance of SMEs is based on calculating the range of scales with the following categories: scores of 3.26-4.00 (good), 2.51-3.25 (good enough), 1.76-2.50 (poor) and 1.00-1.75 (not good). Respondents in this study were the owners or responsible person of SME.

Market orientation consists of customer orientation (4 items), competitor orientation (4 items), and inter-functional coordination (4 items). Entrepreneurial orientation consists of dimension of innovation (5 items), risk taking (4 items), and proactive attitude (4 items). Competitive strategies consist of differentiation strategy (5 items), low cost strategy (6 items), and focus strategies (4 items). SME performance consists of marketing performance (4 items), financial performance (3 items), and operational performance (3 items).

The assessment of market orientation in SMEs is considered to be quite good on average (90%), the assessment of entrepreneurial orientation in SMEs is considered to be quite good on average (90%), the implementation of differentiation strategy on SMEs is considered quite good on average (53%), the implementation of the low cost strategy for SMEs is considered to be fairly good on average (72%), and the implementation of the focus strategy on SMEs is considered poor on average

(58%). The performance of SMEs is considered good enough on average (84%).

4.3. Hypothesis Testing

4.3.1. Effect of Market Orientation and Entrepreneurial Orientation on Differentiation Strategy

The results of multiple regression analysis to analyse the effect of market orientation (X1) and entrepreneurial orientation (X2) on differentiation strategy, obtained the following results: The multiple coefficient of determination (R^2) is 0.100, which means that the variables of market orientation and entrepreneurial orientation contribute to the influence of differentiation strategy on the SMEs in the fashion and craft creative industries by 10.0%.

The results of hypothesis testing with F test obtained results = 5.382; with p-value = 0.000 ($p < 0.05$). This shows that there is a significant influence between market orientation and entrepreneurial orientation on differentiation strategy in creative industry SMEs.

The results of partial hypothesis testing using t test obtained the results of t count 1 = 2.145 with p-value = 0.034 and t count 2 = 1.969 with p-value = 0.052. These results indicate that: (1) There is a positive and significant influence between market orientation on differentiation strategy in creative industry SMEs. (2) There is no significant influence between entrepreneurial orientation on differentiation strategy in creative industry SMEs. Thus, H1a proposed in this study is proven or acceptable, whereas H2a is rejected.

Research findings that explain that market orientation has a positive effect on SME competitive strategies in the form of differentiation strategy supports the results of Afsharghasemi et al. (2013).

Researchers' findings that explain that entrepreneurial orientation does not influence differentiation strategy partially support the research results of Lechner and Gudmundsson (2014) which suggest that entrepreneurial orientation in the form of risk-taking and competitive aggressiveness dimensions does not affect differentiation strategy.

In this study, entrepreneurial orientation has no effect on differentiation strategy, because creative industry SME business people have not been optimally oriented towards innovation. This can be shown from the results of the descriptive analysis on the dimension of innovation which shows that business actors are considered not oriented to the development/renewal of product design and packaging. Business actors do not consider technological renewal in the production process to be very important in supporting the business.

This is because business actors still rely on traditional and simple equipment/technology in the production process, considering the products produced are more accentuating the art and natural elements. An assessment of the dimension of risk taking can be shown that business actors have not dared to maximally utilize existing business potential/opportunities such as: entering new markets and producing products that are truly new to the market. An assessment of the dimension of proactive attitudes can be shown that business actors have not been oriented to be a pioneer in the introduction of new products.

Such conditions do not encourage businesses to implement differentiation strategy in the form of introducing new products that are different from other business actors, producing products that are not easily replicated by other business actors, and price differentiation. Thus, it can be explained that the potential for entrepreneurial orientation will affect the competitive strategy of an organization.

This is in line with the opinion of Poudel et al. (2012) which states that entrepreneurial orientation is a strategic resource of an organization with the potential to produce competitive advantage. The potential for entrepreneurial orientation and its impact on business performance depends on the role of entrepreneurial orientation as a driving force or pioneer for organizational capabilities and innovation.

The findings that entrepreneurial orientation has no effect on differentiation strategies do not support research of Wingwon (2012) and Suci (2009) which states that entrepreneurial orientation has a positive and significant influence on differentiation strategy.

4.3.2. Effect of Market Orientation and Entrepreneurial Orientation on Low Cost Strategy

The results of multiple regression analysis show the value of the multiple coefficient of determination (R^2) of 0.164 which means that statistically the market orientation and entrepreneurial orientation variables contribute to the influence of the low-cost strategy on the creative industry SMEs by 16.4%.

Hypothesis test results with F test obtained results = 9.514; with p-value = 0.000 ($p < 0.05$). This shows that there is a significant influence between market orientation and entrepreneurial orientation simultaneously on the low-cost strategy for creative industry SMEs.

The results of partial hypothesis testing using t test obtained the results of t count 1 = 3.246 with p-value = 0.002 and t count 2 = 2.156 with p-value = 0.034. These results indicate that: there is a positive and significant influence between market orientation and entrepreneurial orientation partially on low cost strategy on creative industry SMEs. Thus, H1b and H2b proposed in this study are proven or acceptable.

The results of this study support the partial research of Afsharghasemi et al. (2013) which explains that market segments consisting of customer orientation, competitor orientation, and inter-functional coordination dimensions had a positive influence on low cost strategy for manufacturing SMEs in Malaysia. This study partially supports the research results of Ge and Ding (2005) which explains that market orientation consisting of dimension of customer orientation and competitor orientation has a positive and significant effect on low cost leadership strategy in companies in China, but the inter-functional dimension has no effect.

Entrepreneurial orientation has a positive and significant influence on the low-cost strategy, partially supporting research of Lechner and Gudmundsson (2014). Whereas the entrepreneurial orientation in the form of dimension of innovation has a positive effect on low cost strategy but the dimension of risk taking has no effect.

4.3.3. Effect of Market Orientation and Entrepreneurship Orientation on Focus Strategy

The results of multiple regression analysis show the value of the multiple coefficient of determination (R^2) of 0.263 which means that statistically the market orientation and entrepreneurial orientation variables contribute to the influence on the focus strategy of creative industry SMEs by 26.3%.

The results of the partial hypothesis testing using t test obtained the results of t count 1 = 3.336 with p-value = 0.001 and t count 2 = 4.015 with p-value = 0.000. These results indicate that: there is a positive and significant influence between market orientation and entrepreneurial orientation partially on the focus strategy of creative industry SMEs.

Hypothesis test results with F test obtained results = 17.263; with p-value = 0.000 ($p < 0.05$). This shows that there is a significant influence between market orientation and entrepreneurial orientation simultaneously on the focus strategy of creative industry SMEs.

4.4. Effect of Market Orientation, Entrepreneurial Orientation, and Competitive Strategies on SME Performance

The results of multiple regression analysis show the value of multiple determination coefficient (R^2) of 0.487 which means that statistically the variables of market orientation, entrepreneurial

orientation, and competitive strategies on SMEs (differentiation, low cost, and focus) contribute to the influence on the performance of SMEs in creative industries by 48.7%.

The results of partial hypothesis testing using t test obtained the results of t count 1 = 2.063 with p-value = 0.042, which means that there is a positive and significant influence between market orientation on the performance of SMEs in the creative industry. These results support the H3 proposed in this study so that the hypothesis is accepted.

The results of t count 2 = 2.865 with p-value = 0.005, which means that entrepreneurial orientation has a positive and significant effect on the performance of creative industry SMEs. These results support the H4 proposed in this study so that the hypothesis is accepted.

The results of t count 3 = 3.150 with p-value = 0.002 which means that the differentiation strategy has a positive and significant effect on the performance of SMEs in the creative industry. These results support the H5a proposed in this study so that the hypothesis is accepted.

The results of t count 4 = 2.038 with p-value = 0.044, which means that low cost strategy has a positive and significant effect on the performance of SMEs in creative industries. These results support the H5b proposed in this study so that the hypothesis is accepted.

The results of t count 5 = 2.710 with p-value = 0.008, which means that the focus strategy has a positive and significant effect on the performance of SMEs in the creative industry. These results support the H5c proposed in this study so that the hypothesis is accepted.

Hypothesis test results with F test obtained results = 17.879; with p-value = 0.000 ($p < 0.05$). This shows that there is a positive and significant influence between market orientation, entrepreneurial orientation, and competitive strategies (differentiation, low cost, and focus) simultaneously on the performance of creative industries SMEs.

Research findings where market orientation has a positive and significant effect on the performance of SMEs supports the results of previous studies (Dublhlela & Dhurup, 2014; Idar & Mahmood, 2011; Liu et al., 2011; Olivares & Lado, 2008). However, it does not support other studies which show that there is a negative relationship between market orientation on SME performance (Hassim et al., 2011).

The findings in this study that entrepreneurial orientation has a positive influence on the performance of SMEs support the results of previous studies (Fairoz et al., 2010; Hassim et al., 2011; Idar & Mahmood, 2011; Keh et al., 2008; Liu et al., 2011; Suci, 2009). However, the findings of this study do not support research which states that entrepreneurial orientation does not affect the performance of SMEs (Arief, Thoyib, Sudiro, & Rohman, 2013; Setyawati, 2013). This is because the educational background of entrepreneurs who are on average are still low so that their entrepreneurial insights are still very minimal.

The findings in this study that competitive strategies have a positive effect on the performance of SMEs support the results of previous studies (Al-Alak & Tarabieh, 2012; Chadamoyo & Dumbu, 2012; Husnah et al., 2013; Yan, 2010). Where competitive strategies consist of low-cost leadership and differentiation have a positive relationship with the performance of SMEs, but the results of this study do not support research of Suci (2009) which explains that business strategies have a negative and significant impact on SME performance, because SMEs do not implement business strategies purely but implementing a hybrid business strategy.

A summary of the results of the regression analysis for testing the effect of market orientation, entrepreneurial orientation, and competitive strategies on the performance of creative industry SMEs can be shown in Table 2.

Further analysis in testing the hypothesis above is path analysis, the results of which can be shown in Figure 2.

Table 2.
Regression Analysis with Performance as a Dependent Variable

Source:
Primary Data Processed

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig. (p)
	B	Std. Error			
(Constant)	0.656	0.315		-	-
Market Orientation (X1)	0.187	0.090	0.173	2.063	0.042*)
Entrepreneurial Orientation (X2)	0.265	0.092	0.240	2.865	0.005*)
Differentiation Strategy (Y1.1)	0.117	0.037	0.250	3.150	0.002*)
Low Cost Strategy (Y1.2)	0.096	0.047	0.168	2.038	0.044*)
Focus Strategy (Y1.3)	0.094	0.035	0.233	2.710	0.008*)
R = 0.698					
R^2 = 0.487					
F count = 17.879					
Sig. (p) = 0.000					

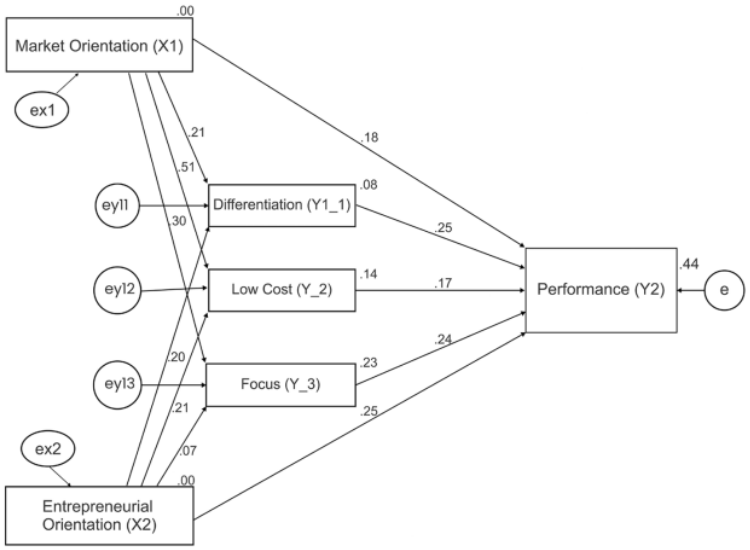

Figure 2.
Path Analysis Mode

Endogenous/ Dependent Variables	Exogenous/Independent Variables	Effects (%)		
		Direct	Indirect	Total
Differentiation Strategy (Y1.1)	Market Orientation (X1)	49.0	-	49.0
	Entrepreneurial Orientation (X2)	46.0	-	46.0
Low Cost Strategy (Y1.2)	Market Orientation (X1)	58.2	-	58.2
	Entrepreneurial Orientation (X2)	20.8	-	20.8
Focus Strategy (Y1.3)	Market Orientation (X1)	30.5	-	30.5
	Entrepreneurial Orientation (X2)	36.7	-	36.7
Business Performance (Y2)	Market Orientation (X1)	18.1	18.2	36.3
	Entrepreneurial Orientation (X2)	25.0	17.4	42.4
	Differentiation Strategy (Y1.1)	25.9	-	25.9
	Low Cost Strategy (Y1.2)	17.3	-	17.3
	Focus Strategy (Y1.3)	23.8	-	23.8

Table 3.
Direct and Indirect Effects of Exogenous Variables on Endogenous Variables

Source:
Primary Data Processed

Based on the results of the analysis with AMOS software as listed in the picture above, it can be briefly presented the direct effect and indirect effect of each exogenous variable (independent variable) on the endogenous variable (dependent variable) as presented in Table 3.

Table 3 above shows that the direct effect of market orientation on the performance of creative industry SMEs is 18.1% and indirect effect of 18.2%. As for the entrepreneurial orientation variable, the direct effect on the performance of creative industry SMEs is 25.0% and indirect effect is 17.4%. This shows that entrepreneurial orientation has a greater direct influence on the performance of creative industry SMEs than market orientation.

5. Conclusion

Market orientation and entrepreneurial orientation simultaneously have a positive and significant effect on competitive strategies of creative industry SMEs. Market orientation has a positive and significant effect on differentiation strategy and entrepreneurial orientation has no effect. Market orientation and entrepreneurial orientation both partially and simultaneously influence the low-cost strategy. Market orientation and entrepreneurial orientation both partially and simultaneously influence the focus strategy.

Market orientation and entrepreneurial orientation both partially and simultaneously have a positive and significant effect on the performance of creative industry SMEs. Competitive strategies consisting of differentiation, low cost, and focus strategies both partially and simultaneously have a positive and significant effect on the performance of SMEs in creative industries.

Market orientation has a greater direct influence on differentiation strategy and low-cost strategy, compared to entrepreneurial orientation. Market orientation has a greater direct influence on low cost strategy than entrepreneurial orientation. Market orientation has a smaller direct influence on the focus strategy, compared to the entrepreneurial orientation. Differentiation strategy has a greater direct influence on the performance of creative industry SMEs than low cost and focus strategies.

Market orientation has a direct influence on the performance of SMEs by 18.1% and indirect influence by 18.2%. Entrepreneurial orientation has a direct influence on the performance of SMEs by 25% and indirect influence by 17.4%. This shows that entrepreneurial orientation has a greater influence on the performance of SMEs compared to market orientation.

The managerial implications of the results of this study are the need to recommend strategies that support the improvement of the performance of creative industry SMEs based on market orientation and entrepreneurial orientation. Market orientation-based strategies can be realized through strategies: intensive marketing strategy, creation of customer satisfaction strategy, creation of competitive advantage strategy, and reinforcement organizational culture strategy.

Intensive marketing strategy is a series of actions to introduce SME products to new regions and or consumers and increase marketing activities in the markets that have been served to increase market share. This can, among other things, be carried out by aggressively promoting SME marketing activities supported by information technology (e-commerce) to expand market access and proactively participate in trade exhibition/expo activities. Customer satisfaction creation strategy is an SME product/service delivery strategy that exceeds expectations from consumers. This can be done by providing excellent service for consumers, offering quality products, and building long-term relationships with customers. Competitive advantage strategy is a strategy to highlight the superiority of SMEs that are more than similar competitors obtained through offering greater value to consumers, either by giving lower prices, providing greater benefits, and better SME services compared to other SMEs with more prices compete. This can, among other things, be done through highlighting the uniqueness of products that are characteristic of SME products, designing products, packaging and labelling that are different from other SMEs, and implementing a hybrid or combination strategy by offering unique/distinctive products and lower prices through operational cost efficiency. The strategy of strengthening organizational culture is realized through actions to strengthen the values, norms, and policies of SMEs that have been agreed upon in running the business. This can be done through changing the mindset of entrepreneurs from sales-oriented to marketing orientation, emphasizing joint commitment in SMEs to be oriented towards customer satisfaction, fostering a conducive SME working climate, and increasing attention to humans (humanity oriented) through the ranks of HR welfare in SMEs.

Strategies that support the improvement of SME performance based on entrepreneurial orientation can be done through strategies: capacity building strategy, self-motivation strategy, organizational innovation strategy, and partnerships (alliances strategy).

Capacity building strategy is a series of actions to improve skills of entrepreneurship, SMEs or groups of SMEs or existing systems to achieve better goals or performance. This can be done through improving technical competence, marketing, human resource management, business finance, and conceptual competence in an entrepreneur. The strategy to increase self-motivation is an encouragement to develop self-enthusiasm for entrepreneurs through positive suggestions to achieve business goals/success. This can be done by developing entrepreneurial soft skills through fostering a positive attitude towards entrepreneurship, maintaining consistency in the business so that business actors do not easily give up, foster perseverance, work hard, and are oriented towards business success so that they can be motivators for other SMEs. The strategy of developing organizational innovation is a mechanism for SMEs to be able to adapt in a dynamic environment through the creation of new ideas by offering innovative new products/services/systems that are oriented towards increasing customer satisfaction. This can be done through the development of production process innovation, product innovation, marketing innovation, business management innovation, and business administration innovation. Partnership strategy is an agreement between two or more partners to collaborate in sharing knowledge and resources to

achieve strategic goals. This can be done by encouraging a proactive attitude from entrepreneurs to expand the network of partnerships or collaboration with fellow SMEs in and or outside the centres/communities, cooperation with large businesses, collaboration with higher education institutions and other government/private institutions related to SME development.

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Performance Matter: Suitability between Organization's Commitment to Employees, Target Setting, and Strategy

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Abstract

The purpose of this study is to provide evidence that in achieving performance, the suitability of Organizational Commitment to Employees (OCE), target setting, and strategy execution is needed. The results of this study indicate that OCE affects motivation, which in turn motivates work to influence performance positively and significantly. Regarding target setting, classifying fixed targets and flexible targets conducted shows that sample groups tend to apply target flexibility, work motivation has a positive and significant impact on company performance. Indirect effects indicate that the suitability of OCE with differentiation strategies and target flexibility will indirectly make a major contribution to company performance through work motivation. These results indicate that the application of OCE in achieving performance with cost leadership strategies tends to use fixed targets.

Keywords: *Organization's Commitment to Employees (OCE); work motivation; target setting; strategy; performance.*

1. Introduction

Human element within the company is considered as an important resource for achieving targets and executing strategies. In a standard incentive plan, a bonus is given if the performance reaches the targeted level. If the performance exceeds this target, the bonus will usually increase (Lee and Miller, 1999; Jensen, 2003; Murphy, 2001). If there are no changes in economic conditions, the motivational effects of targeting and monetary incentives complement each other (Lee, Locke, and Phan, 1997). The aspects of *Organization's Commitment to Employee* (OCE) in the form of providing monetary incentives will play an important role in motivating employees' best efforts to achieve targets and execute strategies. The company's commitment to employees (OCE) can also be demonstrated from various aspects such as the company's attention to employee welfare and satisfaction, with fairness and the desire to provide rewards, bonuses, and investment in developing competencies and compensation (Lee and Miller, 1999)

Regarding to strategy, there is literature that has concerned to the gaps that arise between strategic conception and effective execution (Porter, 1996). Those who have a resource-based view of the company have argued that placement experts such as Porter (1980, 1985) must pay more attention to the resources needed to execute the strategy (Barney, 1991; Teece, Pisano, and Shuen, 1997). One important resource is human capital for the company; its manpower. A dedicated and talented workforce can act as a valuable, rare and irreplaceable resource that can help companies carry out appropriate placement strategies (Lado and Wilson, 1994). Therefore, then the company's commitment to – its concern to and service to – human capital will be easier to achieve higher profitability. Although empirical studies are still not widely done, this human dimension has gained significant conceptual attention by strategists lately (Fiol, 1991; Hall, 1993).

Research on how a company's commitment to employee welfare can help execute profitable placement strategies (Lee and Miller, 1999). Some studies regarding targets indicate the role of important targets in performance evaluation, because target fulfillment or exceeding target is often related to bonus payments (Widener, 2006a), targets are an important element of management control in almost all organizations (Chenhall, 2003). Targets also serves as decision-making tools in planning, coordination, and resource allocation (Hansen and Van der Stede, 2004; Widener, 2007).

This study investigates the implications for the profitability of a company's commitment to its employees on company performance by increasing work motivation. In addition, the research presents and defines the extent to which companies potentially adjust targets throughout the period or remain from the initial target plan. Therefore, in this study, targets are classified into two groups: flexibility target and fixed target. This relationship generates an additional and indirect relationship between the target and the company's performance with the target as a mediating variable, which contributes to the company's performance. More specifically, research observes whether OCE can actually help effective the execution of achievement of targets and placement of strategies associated with performance achievement.

2. Literature Review

The resource-based theory shows that in order to achieve its objectives according to the targets previously set, an organization need an internal capacity structure to adjust external environmental conditions. Internal resources and external market conditions are created through the development of unique strategies. This resource-based theory was introduced by Penrose (1959) popularized by Barney (1991) who stated that the presence of organizational resources and how resources work is very important to enable companies to achieve

competitive advantage over other companies. The concept of resource-based theory originates from strategic management that focuses on analyzing opportunities and threats to organizations in competitive environments (Porter, 1985).

The Organization's Commitment to Employees (OCE) helps the effective execution of the company's strategy placement. In achieving the company's goals, it needs targets that use dedicated manpower from competitive methods to achieve the best company performance. Existing targets are an important element of management control in almost all organizations (Chenhall, 2003). The role of targets is important especially in performance evaluation, because the fulfillment or exceeding of targets is often related to bonus payments (Widener, 2006a). Targets also functioned as a decision-making tool in planning, coordination, and resource allocation (Hansen and Van der Stede, 2004; Widener, 2007).

Many studies in accounting and psychology consider the effect of motivation from targets on individual behavior and show that difficult targets still can be achieved but improve performance (Bonner and Sprinkle, 2002). Targets direct attention to its relevant activities, inject greater and more real effort, and encourage the use of knowledge relevant to works or tasks (Locke and Latham, 1990) or by adjusting targets if economic conditions do not go according to predictions by making the target flexible. This adjustment can show that formulaic bonus plans are imperfect and unable to respond to changes in economic conditions (Burney, Henle, and Widener, 2009). It is also needed with the theory that states that very difficult targets can reduce one's target commitment or can cause pressure or anxiety, which both cause negative motivational influences (Beilock et. al, 2004). On the other hand, however, several contributions state that, even though the targets are difficult, motivation becomes weaker but remains positive and does not turn to be negative if people are still trying to approach the target (Locke and Latham, 1990).

2.1. Commitment to Employees Create Dedication, Effort, and Communities through Motivation

OCE can be shown in many ways: the overall level of concern to emotional and physical well-being, concern to intrinsic job satisfaction and employee development, job satisfaction and fairness of financial compensation, and willingness to share extraordinary money returns with workers at all levels (Eisenberger et al., 1986). Bonner and Sprinkle (2002) and Eisenberger et al. (1986) found out that OCE perception made employees more aware or concerned in carrying out their work responsibilities. OCE also binds a sense of engagement with the company, and greater employee initiative and innovation – even though without direct compensation. The main reason for the above influences in companies is the sense of community and dedication found in OCE (Lee and Miller, 1999). OCE will provide a positive effect on performance through a sense of community and dedication. Strong bond of love can motivate harder efforts, be more willing to cooperate, work faster and do better work (Eisenberger et. al, 1986; Fiol, 1991; Becker, and Gerhart, 1996).

H1: OCE contributes positively to performance through increasing work motivation

2.2. Commitment, Motivation, and Target Setting

In a standard incentive plan, a bonus is given if the performance reaches the targeted level. If the performance exceeds this target, the bonus will usually increase, usually in accordance with the bonus limit (Jensen, 2003; Murphy, 2001). Targets are often also linked to monetary incentives. Similar to the target, monetary incentives motivate the direction, duration, and intensity of the business (Bonner and Sprinkle, 2002). Thus, the influence of motivation from targets and monetary incentives complement each other, according to research evidence if there are no changes in economic conditions (Latham, Mitchell, and Dossett, 1978; Lee, Locke, and Phan, 1997). Target setting is important for the company, there are sufficient empirical evidence about their usefulness and their impact on performance (Arnold and Artz, 2015).

H2: The target moderates the contribution of OCE on performance through work motivation

2.3. Commitment, Motivation, Target Setting, and Strategy

The literature on the views of resource-based companies has focused on human resources as an important resource of competitive advantage (Fiol, 1991; Lado and Wilson, 1994; Teece, Pisano, and Shuen, 1997). Human resources, according to these studies, can be a great asset if people are motivated to use their initiatives for the benefit of the company, and if they showed their loyalty to the company. Again, we emphasized that this kind of dedication may partly stem from the company's commitment to attention, compensation, and employee development (Barney, 1991; Choi, 1994; Fiol, 1991). The emotional and social climate within a company may serve to increase productivity and competitive advantage (Fiol,1991). Companies in collaboration with their employees with a sense of dedication and accompanying community are believed to be in the core of the company's success (Lee and Miller, 1999). Aspects of OCE will play an important role in listing employees' best efforts at executing strategies and achieving targets (Lee and Miller, 1999; Arnold and Artz, 2015).

H3: Suitability between OCE, dedicated positioning strategy, and target indirectly provides a significant contribution in improving performance

Based on the description above, the researcher looks for direction and significance as well as OCE suitability, dedicated positioning strategies, and target settings that contribute to improving performance, which are described in figure 1 as follows:

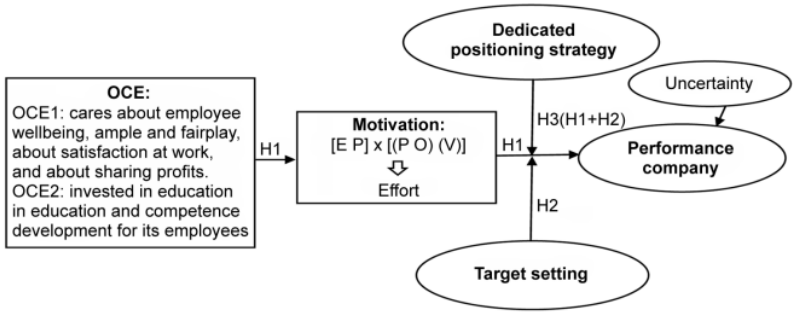

Figure 1. Theoritical Framework

3. Research Method

3.1. Sample and data collection

In this study, samples are needed for assessment / understanding of target setting on a business unit scale using the opinions of company leaders as respondents. Data on determining target researchers were collected from questionnaire data in the manufacturing sector in Indonesia. The method used is an email survey. Data is collected through interviews, telephone, and correspondence. Data was collected through questionnaires for 6 months. Questionnaires returned can be analyzed at 236. The respondents who participated included several positions: President Director (0.4%), Chief Director (0.9%), Deputy President Director (1.7%), and Company Leaders (2.1%). In addition there are also senior managers such as General Managers (14.4%), Marketing Managers (19.9%), HRD Managers (18.6%), Department Heads (11.9%), Financial Managers (8.1%), and Manager (22%).

3.2. Analysis Method

The analysis is done using a multivariate structural equation model (SEM) technique through a multigroup or multisample analysis approach to examine the presence or absence of moderating effects recommended by Bagozzi (1994), Kenny (2011), and Hopwood (2007). Multigroup analysis was suggested with the aim of evaluating conformity after doing sample solving into two different groups (two distinct sample).

Before multigroup analysis is done, Sauer and Dick (1993), and Kenny (2011) suggested testing overall structural models (all group) in order to evaluate the suitability of the model and the consistency of the relationships between variables. Before evaluating the overall model fit for the structural model, it is need to test important assumptions in SEM (Bagozzi and Baumgartner, 1994) which include: 1) Normality of data, especially at multivariate levels. 2) There is no significant and negative error variance. 3) There is no multicollinearity and singularity. 4) There are no outliers.

After the structural model for all groups is declared fit with the data and fulfills the required assumptions, a new multigroup analysis can be implemented. Structural equations and specifications of the measurement model developed are shown in table 1 below:

Measurement Model	
Exogenous Factor	Endogenous Factor
X 1 = λ 1 OCE + e 1	Y 1 = λ 1 Performance + e 7
X 2 = λ 2 OCE + e 2	Y 2 = λ 2 Performance + e 8
X 3 = λ 3 OCE + e 3	Y 1 = λ 3 Performance + e 9
X 4 = λ 4 OCE + e 4	Y 1 = λ 4 Performance + e 10
X 5 = λ 5 OCE + e 5	Y 1 = λ 5 Performance + e 11
X 6 = λ 6 OCE + e 6	Y 1 = λ 6 Performance + e 12
	Y 1 = λ 7 Performance + e 13
C1 = λ 1 Uncertainty + e 15	Y 1 = λ 8 Performance + e 14
C2 = λ 2 Uncertainty + e 16	
C3 = λ 3 Uncertainty + e 17	
C4 = λ 4 Uncertainty + e 18	
C5 = λ 5 Uncertainty + e 19	
Structural Model	
Motivation = Y_1 OCE + d1	
Performance = β_1 Motivation Y_2 Uncertainty + d2	

Table 1. Structural equations and specifications of the measurement model

In the SEM assumption stated that preliminary fit criteria are fulfilled, then evaluating the overall fit model structural, while the summary evaluation results are accompanied by decisions shown in table 2.

It was concluded that the specified structural model was fit with the data. After the structural model is accepted, the next step is analyzing and interpreting standardized regression weight between variables analyzed in the structural model. Estimation results for parameters between variables and decisions are shown in table 3.

Goodness of Fit Indices	Cut off Value	Estimated Result	Decision
Chi Square (χ^2)	198.154*	183.703	Good fit
P value	≥ 0.05	0.178	Good fit
Relative Chi-square	≤ 2.00	1.100	Good fit
RMSEA	≤ 0.08	0.021	Good fit
GFI	≥ 0.90	0.926	Good fit
CFI	≥ 0.90	0.993	Good fit
TLI (NNFI)	≥ 0.90	0.992	Good fit

*Chi Square table at α = 0.05 and df = 167

Table 2. Evaluation of Overall Fit Models of Structural Models

Influence	Estimated Parameters	CR	Probability	Decision
Motivation ← OCE	0.433	6.323	0.000	Positive and Significant
Performance ← Uncertainty	- 0.141	-1.935	0.053	Negative and Insignificant
Performance ← Motivation	0.232	3.429	0.001	Positive and Significant

Table 3.
Results of OCE Parameter Analysis and Interpretation
Source: Estimation Results, Amos 4.01, 2018

Based on table 3 above it appears that the OCE variable has a positive and significant impact on work motivation where in turn the work motivation variable influences performance. While the uncertainty variable as a control variable has a negative but not significant impact on performance.

3.3. Multigroup (Multisample) Analysis for the Target Setting Group

In order to detect and to evaluate the moderating effect of the target variable, the steps that must be taken are as follows: *the first step*, is to classify the sample into two groups; a sample that have target flexibility and samples that has fixed target. By using Cluster Analysis, it was obtained sample groups that had target flexibility (mean 3.12 on a scale of 1 to 7) as many as 142 and sample groups that had fixed target (mean 5.56 on a scale of 1 to 7) as many as 94. Number of members for each group sample still meets the minimum sample threshold for analysis of data with SEM, which is ≥ 50 with multivariate normality requirements met both for the flexibility target and fixed target groups.

The second step, is to estimate the model simultaneously simultaneously for the two sample groups and the values of χ^2 and df (degrees of freedom) are recorded. The value of χ^2 is 405.234 with df = 334. It appears that the value of TLI (NNFI) is 0.965 or is above the threshold of 0.90. The use of TLI (NNFI) in multigroup analysis was suggested by Sauer and Dick (1993), and Kenny (2011) with the aim of evaluating conformity after doing sample solving into two different groups (two distinc sample). Sauer and Dick (1993) and Kenny (2011) explains that the multigroup context analysis of the use of χ^2 to evaluate overall fit models can be relied upon because χ^2 is strongly influenced by the sample size for each different group can be very different, it is recommended to use the Tucker-Lewis Index (TLI) otherwise known as Non-normed Fit Index (NNFI) because it is relatively free from the influence of sample size. Furthermore, the structural path between work motivation variables and company performance is constrained so that the structural path between the two variables is egual for the two sample groups. The model that has been given constain is then re-estimated. The results of χ^2 for the *constrained model* are 411.362 (df = 336) with TLI (NNFI) = 0.963 (> 0.90).

The third step, is comparing χ^2 of constrained models with the previous unconstrained model, the results of this com-

parison produce gaps χ2 (df 2) = 6.138, while the value of the chi square table at α = 0.05 with df 2 is 5.991. These results indicate that there is a moderating effect from the target setting variable. In other words, the impact of work motivation on performance depends on the existence of the target setting.

After the target setting is proven to influence work motivation with performance, then the final step is evaluation of parameters between the sample fixed target versus flexibility target group. Results Evaluation of estimated parameters between sample groups with flexibility target versus fixed target, shown in tables 4 and 5.

Influence	Estimated Parameters	CR	Probability	Decision
Motivation ← OCE	0.594	4.979	0.000	Positive and Significant
Performance ← Uncertainty	-0.187	1.642	0.103	Negative and Insignificant
Performance ← Motivation	0.355	3.192	0.001	Positive and Significant

Table 4. Parameter Analysis Results for Target Flexibility

Influence	Estimated Parameters	CR	Probability	Decision
Motivation ← OCE	0.305	3.491	0.000	Positive and Significant
Performance ← Uncertainty	-0.087	-0.893	0.376	Negative and Insignificant
Performance ← Motivation	0.014	0.146	0.887	Positive and Insignificant

Table 5. Parameter Analysis Results for Fixed Target
Source: Estimation Results, Amos 4.01, 2018

Meanwhile, to be able to see the suitability of the OCE, a dedicated positioning strategy, and targets contributing to improving performance, can be seen from the results of indirect effects, shown in table 6:

Dedicated positioning strategy		Target setting		Decision
Differentiation	Cost Leadership	Flexibility	Fixed	
0.0196	0.068	0.198	0.0389	Suitability of OCE with differentiation strategy and target flexibility will indirectly contribute to company performance through work motivation

Table 6. Result of Inderect Effect
Source: Estimation Results, Amos 4.01, 2018

3.4. Descriptive Variable Indicators

The results of the descriptive variable in the form of respondents' perceptions for each respondent of the studied variables are presented in the following table 7:

Research Variable	Theoretical Range	Actual Range	Mean	S D
OCE	6 – 30	7 – 30	22.97	5.828
Work Motivation [E→P] x [(P→O)(V)]	1 – 343	1 – 343	207.06	60.784
Target Setting	4 – 28	8 – 28	24.21	3.29
Dedicated Positioning Strategy	3 – 15	4 – 15	11.80	2.833
Performance	8 – 25	16 – 56	40.26	9.063
Uncertainty	5 - 56	5 -25	18.22	5.015

Table 7. Descriptive Variable Indicators
Source: processed research data, 2018

The result of OCE descriptive variables show in the table 7, the theoretical range is close to the actual range with an average value of 22.97 and a standard deviation of 5.828, this indicates that the distribution of data with deviations is small. While the perception given by the respondent in answering the questionnaire shows an average of 3.517 on a scale of 5 which indicates that the organizational commitment given to employees is sufficient. Work motivation variables obtained from calculations using the Vroom formula (Nadler and Lawler, 1989), results from [E→P] x [(P→O) (V)] obtain an average of 5.291 with a standard deviation of 0.280 which shows the effect of work motivation

The results of target descriptive variable indicate that the actual range 8 - 28 is in the theoretical range of 4 - 28 with an average of 24.21 and a standard deviation of 3.29. This indicates that answers spread and data deviations are small. While the perceptions of respondents in answering questionnaires showed an average of 3.563 from a scale of 7 indicating respondents in answering questionnaires indicated that they tended to choose enough (middle range). For variable dedicated positioning strategies with an average value of 11.80 and standard deviation of 5.828 indicate small data deviations. Perceptions given by respondents in perceiving companies in implementing strategies tend to strategies tend to differentiation strategies.

Descriptive results of performance variables with an average value of 40.26 and standard deviation of 9.063. This indicates a data distribution and deviations are quite small. Whereas the perception given by respondents for the performance variable shows an average of 5.0338 from a scale of 7 indicating that the performance tends was quite strong. The uncertainty variable shows the actual range is the same as the theoretical range, this indicates that the response is spread and extreme. The existence of extreme value shows that all companies face uncertainty. The average value of this variable is 18.22 and the standard deviation of 5.015 shows small data deviations. Respondents in perceiving uncertainty tended to be sufficient.

4. Result and Discussion

The results of the OCE estimation parameter for motivation are 0.433, while motivation for performance is 0.232. While the OCE contribution to performance indirectly through motivation is 0.101, while the OCE effect on performance is 0.124. With this condition proves that OCE affects motivation, which in turn motivates performance positively and significantly. These results support H1.

By comparing χ^2 between the unconstrained model and χ^2 constrained model, it produces a gap of χ^2 (df 2) = 6.138. The chi square table at α = 0.05 with df 2 is 5.991. These results indicate a moderating effect of the target setting on the relationship between organizational commitment to employees and company performance through work motivation. These results support H2. The parameters of the estimation results between variables for the sample group that tend to have target flexibility, OCE on work motivation have a positive impact (0.594) and are significant. Whereas for sample groups that tend to have fixed targets, OCE on work motivation also has a positive impact (0.305) and is significant. The sample group that tends to have a target of flexibility, work motivation towards performance has a positive impact (0.355) and is significant. But for sample groups that tend to have fixed targets, work motivation towards performance has a positive impact (0.014), but it is not significant.

The results of indirect influences indicate that OCE quality influences performance through work motivation in the target group of flexibility samples is 0.198, while at the fixed target is 0.0389. While the weight of the effect of OCE on performance through work motivation in the sample group differentiation strategy is 0.196, while in the sample strategy group the cost leadership strategy is 0.068. This condition shows that OCE with a tendency towards differentiation strategy and target flexibility strategy will contribute greatly to performance through work motivation. These results support H3. But what can be considered is from the results, it appears that the effect of work motivation on company performance for the target flexibility group is greater than the sample group that have a fixed target, and the differential strategy group is greater than the sample group cost leadership strategy, so that suitability in the target setting and strategy execution is known.

5. Conclusion

OCE has a positive and significant effect on performance through work motivation. OCE that responded well by employees can lead to benefits of providing motivation such as close community, good collaboration, employee loyalty and dedication, job effort involvement, and initiatives that will ultimately increase company performance. These results is confirmed by the research of Lee and Miller (1999). However, what need to be observed in this study are the impact of motivation on company performance depending on the company's orientation to the target policy and the execution of the strategy used. In the sample group that tends to apply target flexibility, work motivation has a positive and significant impact on company performance, while in the sample group oriented to fixed target, work motivation has a positive but not significant impact on company performance.

The suitability between OCE and strategy differentiation and target flexibility will indirectly give a significant contribution to company performance through work motivation. If we concerned to the results of this study, the target flexibility of companies that tend to use differentiation strategies will contribute to greater performance than the group that uses the cost leadership strategy. The results of this study indicate that sampling group, that tends to have confirms cost leadership strategy does not conform if it uses target flexibility. Cost leadership with use of efficient inventory management techniques, cost reduction efforts, and efficient manufacturing process. Researchers understand that target flexibility can be expensive because anticipating target flexibility can make people try to avoid bottom-up adjustments or top-down adjustments, and even reduce target motivation because people do not have clear guidelines for assessing their performance. Studies on target adjustment have explored the extent to which companies revise their targets at the end of the year or have investigated how anticipation of adjustments will adversely affect year-end performance (Anderson, Dekker, and Sedatole, 2010).

The researcher divides the target into a target flexibility and a fixed target is to find out whether the company will revise the target in the face of business conditions for performance achievement. As is known, the usefulness of target flexibility can also depend on the extent to which the target strength can be revised to suit the conditions that occur, but not as a monitoring tool. There are researchers and practitioners who emphasize the target role as one of the evaluation tools between the implementation of work and plans. If the target is rigid and cannot be adjusted to changes in business conditions, researchers will question the usefulness of existing targets (Arnold and Artz, 2015). But there are also those who argue that for easy targeting, such as a rolling budget, to anticipate business conditions that occur will lead to targets that are unclear and uninformative. Easy targets will hinder control-oriented goals. From the explanation above, the tendency of targets to moderate positively or negatively on performance needs to be studied continuously (Hansen and Van der Stede, 2004).

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Application of the Total Quality Management (TQM) Philosophy in a Macedonian Air Conditioning Company

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Abstract

World globalization is a key factor for the increase of market competition through companies that are continuously improving their innovation, productivity as well as cost optimization. This is achieved through the constant development of innovative ideas and involving every employee in the process of change within the company. In order to meet increasingly more demanding customers, companies need to implement quality improvement in every phase of their internal processes.
This paper analyses the application of the quality system currently in place within a Macedonian Air Conditioning Company and aims to create and implement a Total Quality Management (TQM) system on the basis of that research. By successfully implementing the new TQM philosophy, all of the companies' internal processes and employees work toward process improvement, quality assurance as well as meeting the demands and wishes of all parties involved. The TQM system also plays a huge factor in improving customer loyalty and trust, the company's credibility and image as well as its market share and placement.

Keywords: *internal standardization; quality control; quality costs; education and motivation of the employees; TQM (Total Quality Management) system; quality of the service.*

1. Introduction

Quality is the key factor for the continued development and future growth for any organization as well as one of the most important ingredients towards a company's successful emergence in an ever more changing and demanding market environment. All activities that determine the goals, quality improvement, personal responsibilities, planning, insurance, control and company development fall under the scope of the total quality management system. The successful implementation is the responsibility of all levels of management within the organization guided and mentored by top management. The implementation of this system as well as its application requires careful and methodical planning as well as providing with the necessary technical and organizational conditions. The biggest potential however, lies within a company's employees, their technical prowess and proper motivation.

The Total Quality Management (TQM) philosophy is an organizational change aimed to improve the quality of products and services the company offers as well as the people involved in the business process.

The ultimate goal of TQM is to integrate all organizational functions (marketing, finance, design, engineering, production, client services) and to focus on satisfying the needs of the clients and therefore fulfilling the company's organizational goals. The process of applying a new TQM strategy in a business begins by developing a projection of a good quality documentation system that covers all business processes within an organization. This provides with a solid foundation to successfully apply Statistical Process Control (SPC) and effective teamwork, which in turn cannot be set in the case of a poor-quality system (Mitreva et al., 2016). The way to process and service quality improvement as well as business process optimization leads through the application of a suitable methodology for projection and implementation of the TQM system. This methodology consists of: internal standardization methodologies; techniques and methods for faultless work flow; education and motivation and cost quality analysis. This paper has focused on screening an Air conditioning company's process of application of the quality system and as a result of the research, propose a plan to implement a total quality management system.

2. Literature Review

Every advantage that an organization has over its competition can be key for the development and application of the quality insurance system. Many companies take their first step towards the implementation of a TQM (Total Quality Management) system by implementing ISO 9001 (Balbaster Benavent et al., 2005; Casadesus & Gimenez, 2000). Upgrading the ISO 9001:2015 with the TQM strategy ultimately results in the rise in quality. After defining, designing and perfecting the process through extensive research, the upgrade has a positive influence on productivity and cost optimization. The quality system has several key factors, such as the organizational structure, responsibilities, actions, processes and resources invested by the management in reaching the quality standard (Garg, 2014; Mitreva, 2011, Mitreva et al., 2017b).

Quality assurance is a system that can detect problems before they occur. Projecting the Quality assurance system is based on the Deming circle PDCA (Plan, Do, Check, Act) model that analyses the conditions, methods and processes as well as

their interaction. Quality Management (QM) encompasses a system of procedures, protocols and documents that are needed to then define, plan, manage, control and evaluate all existing and foreseeable processes within a company, both internal and external. Maintaining and ensuring quality is the responsibility of everyone involved, regardless of their level in the organization. Quality is the sum of all business activities. To re-examine the quality system means to assess the current system and how adequate it is in relation to the ever-changing goals and operational policies of the company determined by the management.

One of the demands of the ISO 9001:2015 is using the Statistical Process Control (SPC). With SPC we can measure the current process performance and define possible improvements that can be made. The important statistical methods that are often used to detect and prevent defects are: checklists, Pareto diagram, cause and effect diagrams (Ishikawa diagram), control tickets, correlation diagrams, histograms, trend movements and so on (Kaplan & Norton, 2001; Ciampa, 2005; Deming, 1996; Mitreva et al., 2017a).

Good education and training for the employees is key to ensure a good quality system. Employees need to learn new techniques and methods of working to minimize defects. They also need the proper motivation and drive in order to secure and upgrade the quality without being forced to do their work (Gómez Gómez et al., 2011; Wee et al., 2016; Parker, 2003; Fatemi et al., 2016; Beskese & Cebeci, 2011).

The implementation of the total quality management philosophy (TQM) goes hand in hand with choosing the right people to perform all the tasks in accordance to the level of their education, motivation as well as employee suitability and competence.

Motivation is one of the pillars of the quality assurance system. It is an essential part of building a good system. All the internal factors that consolidate the intellectual and physical energy depend on the motivation of the employees. Motivation initiates and organizes individual activities, gives purpose and direction to employee actions and determines the direction, intensity and duration.

By analyzing the cost of quality improvement one can control the loss and bring it to a minimum when looking at the expenditure of materials and employee energy. The cost to achieve quality is very important to the company (Beskese & Cebeci 2001; Mitreva & Filiposki, 2012; Mitreva et al., 2016).

Projecting a measurement system enables a systematic approach towards results gained in terms of analyzing and determining critical points, defining loss, problem solving and their successful implementation. In order to close the PDCA circle we must first go through the results of how the business operates and then implement the necessary corrections in order to achieve a spiraling and continuous improvement that will lead to new possibilities to improve the quality in the future. Customer suggestions, appeals, recommendations, debates and questionnaires represent the resources for this measurement system. In order for a company to react accordingly, it is very important to avoid misunderstanding the customers appeals and objections, and to put in practice a continuous monitoring of customer satisfaction. This is a very valuable resource of information for the strategic business analysis and management. How pleased the customer is with the product is a determining factor in future customer relations. A satisfied customer has a higher chance of becoming a recurring customer (Madan, 2010; Ritchie & Dale, 2000; Saat & Talib, 2015; Shameer & Sing, 2013).

3. Methods in the Research and Analyses of the Results

This study applies the QC-CE model in total quality management as a combination of the QC-concept (Quality Circle) as well as the CE approach (Cause and Effect) (Mitreva, 2011; Mitreva & Filiposki, 2012). The foundation of the QC-concept is the Deming-circle that is based on the: plan – do – check – act circle. The application of this model means that every activity in the organization is precisely planned and executed and that the results of it need to be checked. If they do not meet the expectations, corrections need to be made. These corrections then make a full circle to begin again by planning. The CE – approach (Cause and Effect) is the most suitable to include all elements and factors that are crucial for the completion of every systematic task along the way. The CE - diagram enables us to take into consideration all the factors that have a direct correlation to the task completion and function of the quality system: What?, Who?, When?, How?, Where?, Whom?. We can see more details about the QC – CE model application in the air conditioning and heating company later in this study (Mitreva & Filiposki, 2012).

By following the newest trends, the company for air conditioning and heating has delegated the activities and responsibilities between all sectors and departments in order to satisfy client demands and requests more easily, and at the same time to maximize the advantages to be gained in the business network in order to form a solid foundation towards continuous growth and development. In this company, it is the director that defines the responsibilities, obligations and internal relations of the company employees as well as their job descriptions. The application, maintenance, utilization and constant improvement of the total quality management system falls under the responsibilities and obligations of the management. This is underlined by information gained on the importance of meeting the demands of the clients, complying to laws and regulations, defining and implementing quality improvement policies, determining the company's quality goals, securing the necessary resources as well as the constant self-re-examination and strive for improvement by the management. On the first diagram, it can see the organizational structure of the company, Figure 1.

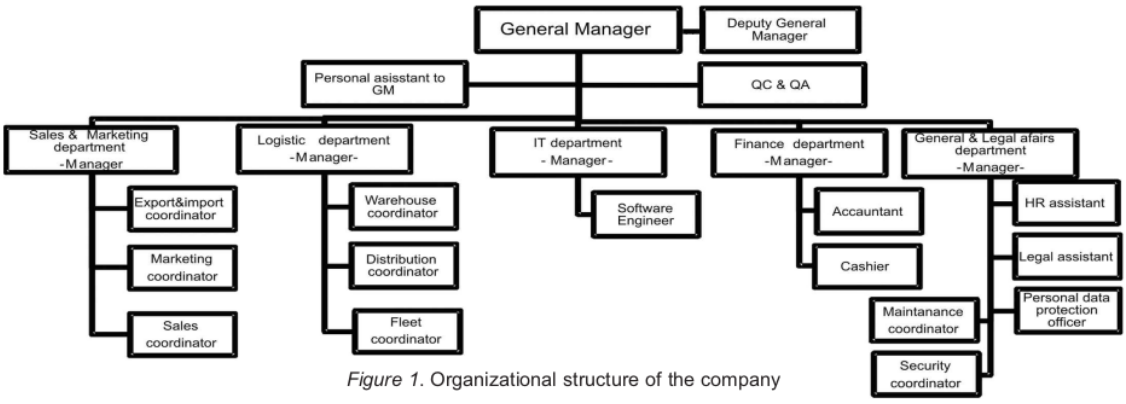


Figure 1. Organizational structure of the company

The policy for quality is determined by the director and is in accordance with ISO 9001 standards as well as the environmental protection control system 14001 while following general company policies. The air conditioning company understands and takes actions to fulfill all customer needs and requests as well as the demands and needs of everyone involved in accordance with all laws and regulations that apply to heat supply. By applying all the newest technological advancements and improving employee excellence and competency, the company can pay closer attention to improving product and service quality, customer relationships and customer trust. All this leads to the increase in the number of satisfied customers, performance process improvements, successfully meeting deadlines and ultimately improving the business as a whole.

The company's main motto is to continually raise the level of knowledge, competence and skill in performing all work-related processes and tasks, especially the ones that can directly influence the quality of the services and products. The company is dedicated to comply with all the laws and regulations of the local and nation-wide authorities. Special attention is given to raise the level of professionalism when dealing with suppliers and all parties involved. The everyday activities of the company go hand in hand with ensuring a healthy work environment by training the employees to raise awareness to do quality work. The quality policies are in accordance to general company policies. They are available to all employees and interested parties in the office as well as the official company website. In accordance with company activities as well as demands and principles of the standards, the quality policy holds functional value within a company. The policy needs to be fully implemented in order to ensure full transparency of internal operations and design performance improvements in the future.

The company is based on a process approach that is underlined by establishing, managing, defining and maintaining a quality system in accordance with all the demands and standards subject to analysis, supervision and constant improvement. The ultimate goal is to continuously improve and satisfy the demands of all interested parties. This is shown in more detail in the diagram below, representing the basic process of the company, Figure 2.

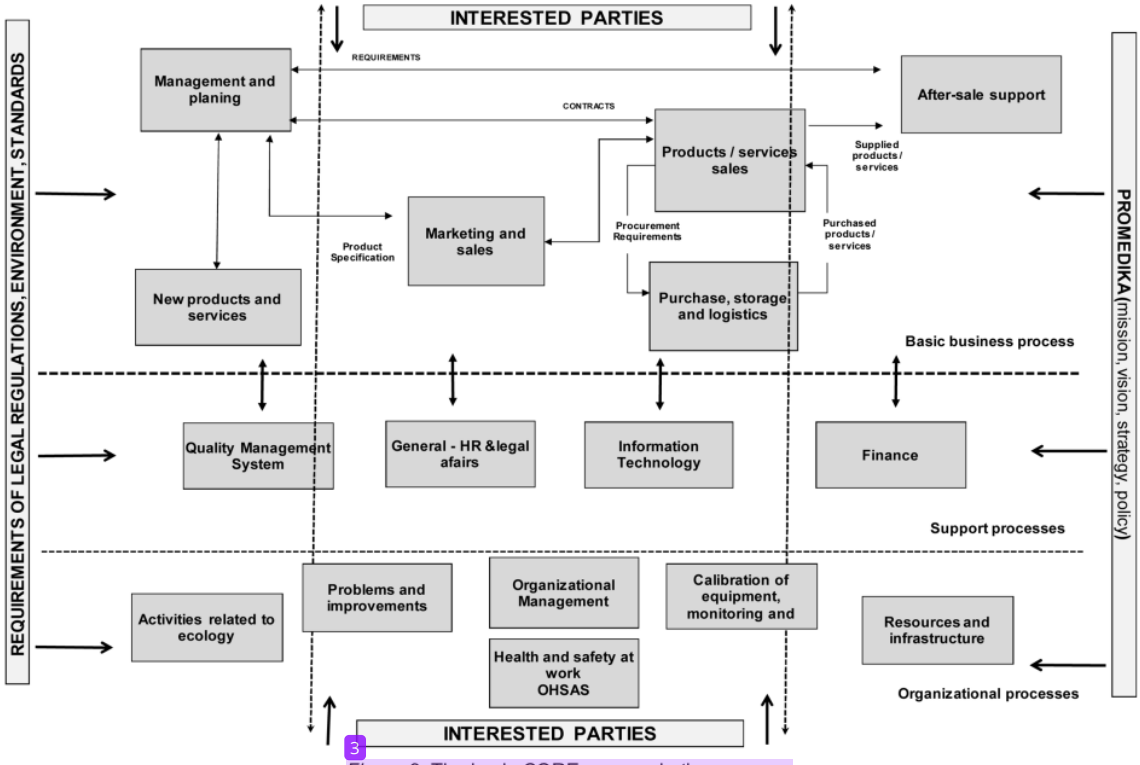


Figure 2. The basic CORE process in the company

The quality control department is responsible for establishing and maintaining constant control and upgrade of the quality system in company processes. The department overlooks implementing new demands and standards related to ensuring a quality product and service as well ensuring the satisfaction of clients and end-users (Mitreva, et al., 2018b). All employees are included in the process of developing and implementing a TQM strategy, forming a business environment and the creation of new products and processes under the guidance and full support of top management. The company is guided by the principle of fully documenting all operations and processes by constantly identifying and dealing with all employee discrepancies. The following diagram is a practical example of projecting the sales process through defining: company operations, process owner, necessary resources, key performance indicators (KPI's) as well as all incoming and outgoing processing documentation, Figure 3.

All the processes in the company are planned and realized with the standard operational actions including all the elements, activities, performers and documents. In order to realize it's processes successfully; the company constantly performs training of all personnel involved in company operations by the process owner. The training is documented with employees confirming they understood and accepted the standard operational procedure (Mitreva et. al., 2017a, Mitreva et. al., 2017b).

Methods of monitoring the performance by analysis of the key process indicators are implemented in order for the company to increase the quality level in all business and organizational processes, reduce cost, reduce product price, improve customer trust as well as raise the knowledge level and

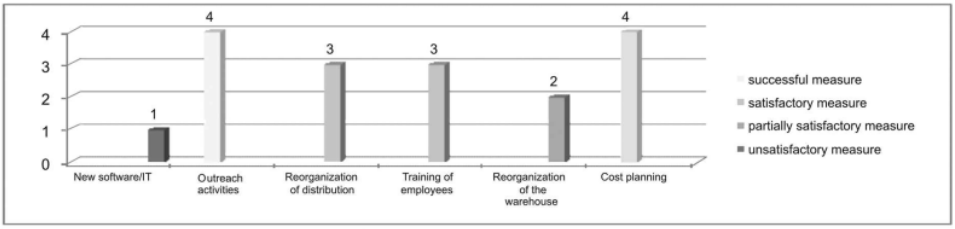
Requarements ISO 9001 ISO 14001	Diagram of Sales Process			Date _____ Version: 1
Resources	**Input**		**Output**	**Documents**
Employees: 18	Request for offer / offer		Document for delivery	QP 1030-1
Products: Heating and Cooling equipment, Ventilation equipment, appliances	Purchase Order from client		Invoice	QT 1030-4
			Bank guarantee	QR 1040-3
	Documents for the sale		Document for order	QP 1030-4
			Complaints statement	QT 1030-16
Physical resources: computers, printers, cars, telephones			Documentation for post-sale activity	QT 1040-8 QT 1040-11
Financial: budget	Tenders	**Resolving complaints**		QR 1040-1
Business environment: laws and regulations		**Requirements review**	Paper receive / loan	QT1020-10-1
		Defining customer requirements	Book of records of invoices	QT1030-37
IT – software: **Software**		**Offer delivery to the client**	Monthly Activity Report	QT 1040-2
Outsourcing: Outsourcing: external trainers, printing services		**Conclusion of a contract**		QR 1030-2

Control points	KPI	Method of measurement	Frequency	Record	Responsible person
1.Sales plan	Realization of the plan	Marketing and business plans, concluded contracts	Once a year Monthly Tracking	Plan	Department Manager
2. Purchase plan	Realization of the plan	Software	Monthly	Plan	Department Manager
3. Inactive liner delisting	% decrese of inactive liner	Actions, withdrawal of product	Quarterly	List of inactive liner, analysis	Department Manager
4. Number of complaints for products and services	Number of resolved / unresolved complaints	Monitoring of complaints	Quarterly	Complaints	Department Manager
5. Liner turnover	% on inactive liner,% of realization of procurement sales and plans	Software, statistical methods, actions	Quarterly	Report for % of turnover increase	Department Manager
Made by:		**Approved by:**			

Figure 3. Sales process in the air conditioning company

skill of its employees. These methods determine the ability of the processes to accomplish the goals of the company. Corrections need to be applied if the goals are not reached. The company carries out planning and implementation of the processes for monitoring, measuring, analysis and improvement in accordance with the defined procedures and guidelines, which prove the conformity of the products and at the same time ensures the functioning and continuous improvement of the efficiency of the quality management system. Monitoring and measurement activities are the basis for setting goals and objectives for the following year. There are three important factors in successful application of statistical methods: awareness of the need, trai-

Points	Action	New software/IT	Outreach activities	Reorganization of distribution	Training of employees	Reorganization of the warehouse	Cost planning
4	successful measure		4				4
3	satisfactory measure			3	3		
2	partially satisfactory measure					2	
1	unsatisfactory measure	1					
	Measure scoring	1	4	3	3	2	4



Measure by performance	
successful measure	2
satisfactory measure	2
partially satisfactory measure	1
unsatisfactory measure	1

Figure 4.
Analysis of the efficiency of implemented corrective measures in the air conditioning company

ning and use of suitable software.

Measurement and analysis are done in key areas that affect profits, process performance, and user satisfaction. The internal quality system verification is carried out in order to verify the compliance of the undertaken activities and results with the planned activities and determine the efficiency of the application of the quality system. Internal checks are done at least once a year or by request, based on pre-determined inconsistencies, repetition of errors or analysis of complaints. The reports of the conducted audit are submitted to the top management, and the corrective measures are taken to the responsible employees in the respective area for the purpose of their timely implementation. By re-checking, the efficiency of the corrective measures is verified, and for this all the analysis of the implemented measures and their success, Figure 4.

In the process of measuring and analyzing the activities and irregularities that occur in different operations and processes, a checklist is drawn up, but analysis and measurement is done for the state of the infrastructure, the records of electronic distribution of documents and internal acts (Mitreva et al., 2018b). Based on the checklist, Pareto analysis (Fig. 5) is used to determine the factors that could have the greatest impact on sales. From the Pareto analysis of irregularities in the company we can conclude that the sale conditions are the most influential factor. The problems that may arise from the software or its application are nearly negligible, Figure 5.

No.	Reason	Frequency	Cumulative frequency	Percentage
4	Sales conditions	11	11	29,73%
3	Marketing	8	19	51,35%
1	Training of employees	6	25	67,57%
5	Product quality	5	30	81,08%
6	Service quality	4	34	91,89%
2	Software	3	37	100,00%

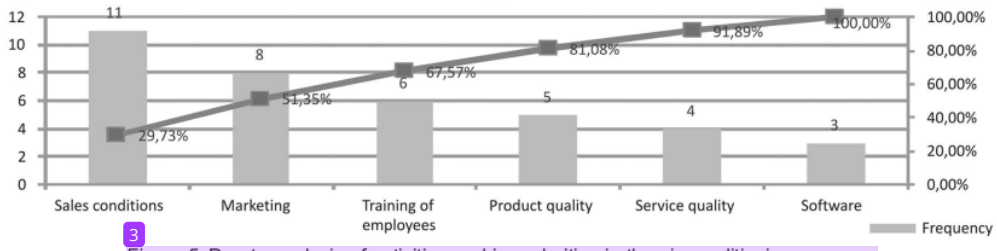


Figure 5. Pareto analysis of activities and irregularities in the air conditioning company

Based on the Pareto approach, the Ishikawa Diagram (Figure 6) is prepared to identify problems and their cause, the factors that influence the sales. Ishikawa diagram is a tool that helps to identify, classify and present possible causes for a particular problem, aspect or danger. The diagram graphically depicts the relationship between a given effect and all the factors that affect it.

The new software that the company has recently imple-

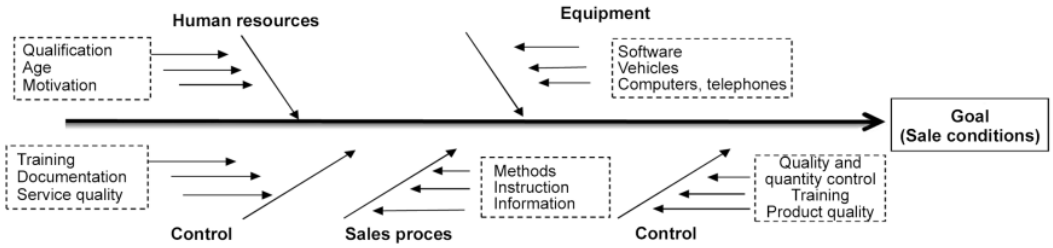


Figure 6. Ishikawa diagram used to identify the main factors that affect sales

mented is used to perform analysis that monitor the state of the company by measuring customer satisfaction, evaluating suppliers, monitoring and analyzing complaints, financial analyzes and keeping track of equipment in storage.

In order for the system of total quality management to be efficient, a matrix of authorizations is created where the company's executives are displayed as well as their responsibilities and authorizations regarding the decisionmaking, approval, development, implementation and control of the overall quality assurance system in the air-conditioning company. The General Manager has the exclusive authorization to execute all processes in the company. In the case of his absence this falls under the responsibility of the Deputy General Manager, Figure 7.

Most of the employees in the air conditioning company have university education. The progress of the company is due to well-trained staff and its continuous improvement. In order for the company to provide a future and continued development for its employees, it continuously works to educate its staff. The employees are actively involved in the development of a company in accordance with their competence, knowledge and experience. Employee satisfaction is clearly visible through the commitment to their work and the ongoing educational process. Employee training is an important part of the company's development planning.

Cost control and cost optimization takes up a significant part of data analysis. This activity takes place in all sectors through the preparation of calculations, reviews, plans, reports and other documents that provide analysis of different types of data (project, product, equipment, etc.), in order to make meaningful decisions and continuous improvement.

The air conditioning company uses tools and methods that help increase the market share, fully meet the strict requirements of the standards, satisfy customer needs and demands as well as strive for continuous improvement of the quality. For

ISO 9001 ISO 14 000 ISO 18 000	General Manager		Deputy General Manager		QA & QC Manager		Sales & Marketing department Manager		Logistic department Manager		IT department Manager		Finance department Manager		General & Legal afairs Manager	
	decide	approve	decide	approve	decide	approve	decide	approve	decide	approve	decide	approve	decide	approve	decide	approve
Quality police	D	A	D	A	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/
Quality manual	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/
Organizational chart	D	A	D	A	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/
Job description	D	A	D	A	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/
Defining processes	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/
Quality planning	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	AF	PIC	/
Documentation - Chapter 4	D	A	D	A	PIC	/	I	/	I	/	I	/	I	/	I	/
Top management Responsibility Chapter 5	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/
Review by top management - Chapter 5	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	AF	PIC	/
Communication - Chapter 5	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/
Resources - Human Resources Chapter 6	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	AF	PIC	/
Resources - Infrastructure Chapter 6	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	AF	PIC	/
Resources - Work Environment - Chapter 6	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	AF	PIC	/
Product realization Processes - Chapter 7	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	AF	PIC	/
Internal audits - Chapter 8	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/
Measurement and analysis of processes and products	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	/	PIC	/
Continuous improvement - KP action	D	A	D	A	PIC	OC	PIC	/	PIC	/	PIC	/	PIC	AF	PIC	/

LEGEND

D	decide
A	approve
P	prepare, participates in preparation
I	implement
PIC	prepare, participates in preparation, implement, control
C	control
AQ	approve quality
AF	approve finance

Figure 7.
Matrix of responsibilities and authority in the air conditioning company

Evidence of complaints

No.	Description of the complaint (for product-manufacturer, name, code, serial number, date of import, date of installation / servicing)			SPARE PART	Qty.	Date of claim	NOTE
	SPARE PART	UNIT	SN	CODE			
1	VENTILATOR-LINER	OOO1		2200115	2	07.2.2018	Solved-Accepted by manufacturer in w arranty
2	PC BOARD	AAA1		3100225	1	09.3.2018	Solved-Accepted by manufacturer in w arranty
3	FINTER FOR INDOR UNIT-LINER	OOO1	545485558	2200228	2	15.3.2018	Solved-Accepted by manufacturer in w arranty
4	PLASTIC MASK	BBB2	457485655	5538911	1	01.4.2018	Solved-Accepted free of charge *customer focus
5	CONDESATOR	CCC3	457855448	10002078	1	19.4.2018	Solved-Accepted free of charge *customer focus
6	GENERATOR	AAA1	445171259	6744871	1	25.6.2018	Solved-Accepted by manufacturer in w arranty

	Q2 /2018	Q2/2017
LINER	4	4
AAA1	2	2
BBB2	1	2
CCC3	1	2
Total Q2 /year:	**8**	**10**

Q1	
SOLVED	8
NOT SOLVED	0
VALIDATE	8
NOT VALIDATE	0

CORRECTIVE / PREVENTIVE ACTIONS	
Complaints are in accordance w ith the quantity of sold devices.	
Corrective measures: / Preventive measures:	
to monitor and analyze complaints on a monthly basis	

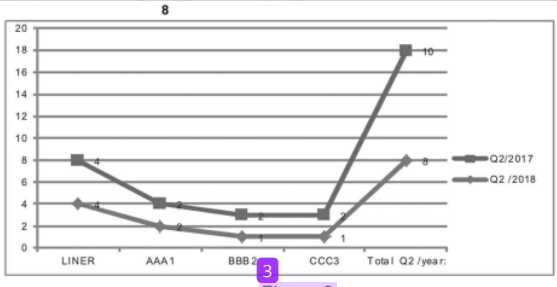


Figure 8.
Complaints evidence /quality cost analysis in the company

this purpose, in addition to the implemented procedures, instructions, records, as part of the overall standardized documentation, the company also introduced new software used to make appropriate analyzes for reducing the variability of the processes, and as a result increase the quality of the products and services.

The plan for the realization of products and services is determined on the basis of the plans in each sector at weekly, monthly, quarterly and annual interval as needed. Prior to the preparation of the plans, an analysis of the operation is carried out and the resources necessary for the realization of the plans are checked. The correct procedures and work instructions are defined for all product related processes.

The modernization of information and communication technology in every segment of the processes allows development of specialized software for statistical control of the processes in order to enable managers to move from subjective decision-making to objective decision-making based on analysis and experience and based on the analysis and processing of statistical data. Applying the methods and techniques of quality in the company leads to an increase in employee motivation, increased productivity, expansion of markets, etc. From analysis of data processing, inconsistencies, complaints, etc. the application of corrective measures with defined deadlines for enforcement, responsible persons and persons for monitoring of procedures arises, Figure 8.

Internal checks, which are performed at least twice a year, as well as the external check, are a great way of checking the quality system and the realization of all processes in the company in order to achieve the organizational goals.

In 2018, the air conditioning company acquired the prestigious recognition for the 2018 "Macedonian quality" awarded by the Macedonian Chambers of Commerce in accordance with the established criteria in the creation and maintenance of a national brand. Quality recognition is an incentive to continue with successful work and to represent the country with quality and confidence and to promote business success.

4. Conclusions and Recommendations

Adopting the total quality management philosophy in the company means continuous improvements, increasing the commitment of top management and employees to improve the processes as well as the satisfaction of all employees, suppliers and the community. The benefits of total quality management are mutual, both for the organization and for the buyers. For customers it means to have their needs and desires met, and for the company increased reputation and sustainable development.

The company values in terms of respect for the decisions of top management, compliance with the legislation, market demands, willingness to take a risk, the drive for innovation, investments in new resources, employee training and development, the application of new methods for analysis and measurements, compliance with standards, etc., are the major benefits of applying the TQM philosophy.

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Continuous Improvement in Practice within Oil and Gas Industry

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Abstract

The case study presents how the implemented Quality Management System is maintained and improved within an Oil and Gas Company. The methodology may be extended irrespective of industry to ensure products' quality and to obtain a high level of Customer Satisfaction. In order to ensure the effectiveness of QMS implementation, considering the stakeholders' needs, continuous improvement projects have been run. The processes are coordinated and controlled in a systematic and transparent manner, using six sigma tools. The company's objectives are cascaded at sub-units level, and then these objectives are followed. In case of deviation the Root Cause Analysis is applied together with FMEA, then the process is redesigned and finally an internal audit is conducted for the improvement validation.

Keywords: *quality management system; process redesign; FMEA; internal audit.*

1. Introduction

According to the provisions of the ISO 9001:2015 [1] considered as reference standard, a company acting in design, development, production, installation and servicing of petroleum equipment for the drilling – oil and gas industry, in different geographic, climatic and environmental conditions has been considered as case study. The main objective of the study is to highlight the main steps followed for the application of the Quality Management System, as well as the influence of the adopted improvement methods, meant to support success to the company [2, 3].

2. QMS implementation – processes, objectives, targets

The company has identified the processes [1, 2, 10] in order to obtain the intentional results framed as follows:

Management system processes: Controlling the management system documentation (setting rules, implementing rules, verifying the application of rules through internal audit, implementing improvement actions), Management commitment, quality and environmental policy and objectives (establishment, implementation, certification, achievement, effectiveness and setting of improvement measures);

Customer orientation (identifying customer requirements, fulfilling them, monitoring customer satisfaction, establishing measures to increase customer satisfaction);

Responsibility, authority and communication in the organization (assignment of responsibilities, authority, resources, appointment of the management responsible, verification of efficiency and effectiveness, establishment of improvement measures);

Management analysis (planning, reporting, analysis, measures);

Protection of resources: Human resources, training (identification of needs / planning, assurance / training, knowledge assessment, setting of measures); Infrastructure (need identification, insurance, monitoring / measurement, setting of measures);

Medical work (establishment, insurance, monitoring, and setting-up improvement measures);

Processing of the product / provision of the service: Planning the product realization (development of technologies, verification of the application, establishment of improvement measures);

Processes related to customer relationship (planning, performance, control, improvement measures);

Design and development: Supply (planning, performance, control, improvement measures); Control of product manufacture and service provision (planning, execution, control, improvement measures);

Monitoring and measuring equipment control (planning, performance, control, improvement measures);

Measuring processes: Customers satisfaction (market-marketing research, setting indicators, satisfaction assessment, establishing measures to increase it);

Internal audit (planning, conducting and reporting, results analysis, setting up improvement measures);

Monitoring and measuring processes, product, environmental issues (monitoring planning, performance, analysis, setting up improvement measures);

Data analysis (setting needs, data collection, analysis, setting up improvement measures);

Continuous improvement (identification of needs, application of improvement techniques, results evaluation, setting of measures);

Corrective actions / risk benefits (identifying needs, setting corrective actions and identifying opportunities, checking effectiveness, setting up improvement measures).

External processes that may influence products compliance are the chemical testing of metallic materials and the verification process of monitoring and measuring equipment. These processes control is proceed at the suppliers' initial assessment

and the evaluation criteria include either accreditation in line to SR EN ISO / CEI 17021 or accreditation as laboratory / qualified metrological staff.

The materialization of the ***Quality policy*** is achieved by designing, implementing and maintaining a quality management system that will allow the achievement of the following strategic perspectives:

Clients: achieving and maintaining quality services;

Human resources: the employees must be trained and have specific responsibilities in order to increase the customer satisfaction and to be fully committed in implementing the company's quality policy which means to meet the customer expectations and to continually improve the quality of delivered products and services provided;

Operations: the process approach through the planned and harmonious development of the internal processes aims to maximize their efficiency (increase of productivity, implementation of new processes, qualification / validation of processes);

Financial: by realizing the objects established through the previous perspectives, it is aimed at increasing the profit, equipment depreciation, debt recovery, improving the capital flow;

Change Management: by pursuing the implementation of the latest ideas and processes for the benefit of the company's clients;

Environment: implementing an environmental management system to show the respect for environment and civil society.

Processes: those that directly affect the quality of products or delivered service and the quality requirements for each process.

Responsibilities definition: the organization, responsibilities and management duties defined by job descriptions and management decisions.

The organizational structure of the company is established through the organization chart, which is regularly updated and approved.

The fundamental objectives of the case-study company are orientated to the client by delivering valves in a way that will lead to meet all the explicit and implicit requirements of the clients. The objectives represent the baseline of the quality policy (Fig. 1), taking into account the determining factors in achieving and increasing the company's performance, as follows: the quality of the products and services that are delivered and the continuous improvement. The improvement will be accompanied by the increasing of the economic efficiency and in long-term profitability.

Safety	Target	Customer	Target
Incidents < 10 (end of year)	< 2.67	On time delivery	> 85%
		Customer complaints costs	< 0.01 %
Commitment for safety responsibility	100%	External Audits without nonconformities results	100%
		Minimizing the answering time for quotation	5 days

Safety	Target	Time cycle	Target
Six Sigma improvement projects	$ 4.68 mil	10% reducing the number of days without orders	<18
Scrap (< $490.000 < 0.35% production)	<0.35%		
Manufacturing plan	100%	Tasks accomplishment (the answering time between offer and order)	≤ 42 days
Technical productivity improvement 3%	70%		

Figure 1. Objectives 3C (Customer, Cost, Cycle) & Safety

General Objectives established by the global company are seen in Figure 1, where the objectives 3C (Customer, Cost. Cycle) and Safety are cascaded in specific objectives with associated targets, as follows:

Safety objectives: Incidents should be less than 10 cases per year counted at the end of the year and the safety responsible commitment should be 100%;

Customers objectives: the commitment of products delivering to be On time in more than 85% cases, Customer complaints costs to be lower than 0.01 % of sales volume, External Audits without nonconformities results to be passed in 100% cases and Minimizing the answering time for quotations to 5 days, which represent the time of answering to the internal system of evaluation for the customers' requirements transformed in quality plans.

Costs objectives: Six Sigma improvement Project from all the internal projects to save at least $ 4.68 million, the total number of Scraped products to be lower than $ 490.000 and lower than 0.35% of the production volume, Manufacturing plan realized 100%, Technical productivity improvement to increase with 3 % in order to reach the target of 70% improvement for the year in course;

Time Cycle objectives: Reducing with 10% the number of the days without orders so as to be decrease under 18 days, Task accomplishment, which represent the answering time between the offer from company and the order from clients, less than 42 days.

Each department cascades own objectives in close relation with the global ones [8, 11] and explicit and fix targets accordingly.

3. Quality Planning

The General Manager through the Quality / Environment Director ensures that the management system planning is implemented as drafted in the Quality Improvement Plan prepared by the Quality Assurance Responsible. In order to follow the plan, the Objectives indicated above are applied to the entire company and, for each hierarchy level, targets are set to track their achievements as well as improvements, as appropriate.

3.1. Objectives planning for the Quality Assurance Department

In figure 2, the evolution of the average for response time, for each month may be seen, considering the target fixed for 2 days.

One may notice that the target was achieved, the response time ranging between the maximum in June (1.71 days) and the minimum in August (1.29 days).

The completion of the second objective, finalizing in 96% from cases the Quality Plans with one week earlier, may be seen in Fig. 3.

In our example the better value in time for a completed quality plan was with 19 days earlier and the most delayed one are the two cases with "0" for which the quality plans were finished in the completion date.

In order to obtain the positioning comparing to the objective, the average of number of days for all quality plans is used. In our case the average is 8.345 days, which means that the target is achieved.

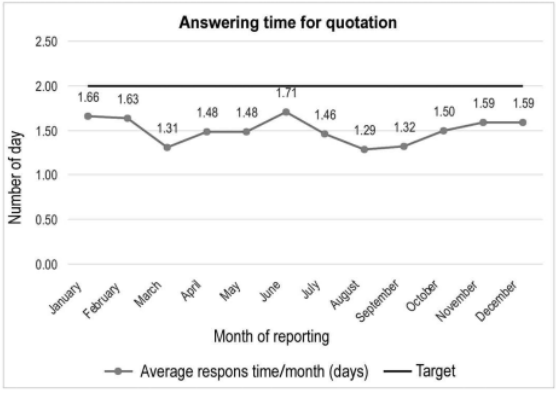

Figure 2. The time Response For Quotations (RFQ/On Base), target: 2 days

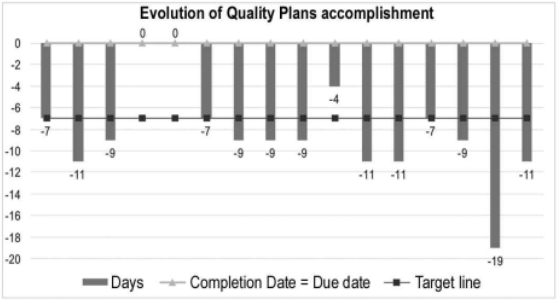

Figure 3. Quality Plan completion

The third specific objective was the Time of closure for Corrective actions reports less than 120 days, for minimum 90% of cases, indicated in Fig. 4.

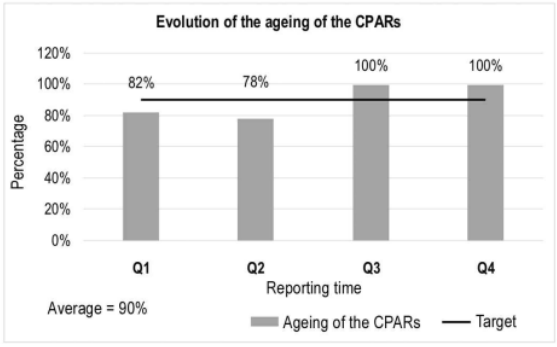

Figure 4. Time to closure of Corrective action reports
Note: each Quarter include 3 months of report
(eq. Q1 – January, February, March)

For each Quarter of reporting (Q1, Q2, Q3, Q4), the evolution of the Age of each CPAR (corrective and preventive action report) is followed. For Q3 and Q4 the result is above the objective, but calculating the average with Q1 and Q2, the result is 90%, meaning that the objective is achieved.

The forth specific objective, Minimum 90 % from Corrective actions reports to be closed in time through a better planning and internal communication may be followed in Fig. 5.

One may notice that in the first part of the year the objective of 90% is achieved (in gray), but this was not the case in the second part of the year (in black). Taking into account the average for all months, the final result was 84.27% of reports closed on time, which conclude that this Objective was not achieved. Consequently, an in depth process measurement and analysis has been conducted in order to improve it, using six sigma tools [6, 7].

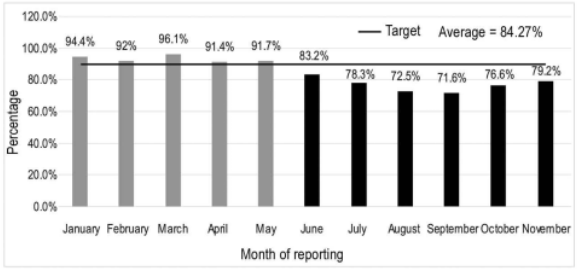

Figure 5. Corrective action reports closure evolution

4. Analysis, measurement and process improvement

The processes necessary for monitoring, measurement, analysis and improvement are planned and implemented for proving the conformity of products and services, ensuring both the conformity of the quality management system and continuously improving it.

These processes include the determination of the applicable methods, the use of statistical techniques and the extent of their use. In order to identify the current performance status, the targets set in the previous year were analyzed. Following the analysis, the failure was identified in the Corrective Reports area (Fig. 5)

The causes of the deviations in the Corrective / Preventive Reports area are analyzed and an action plan is established in order to eliminate the root causes of those errors. These actions are synthesized in a new phase of planning and standardization to prevent the occurrence of non-conformities. The process map for the actual process is described in figure 6.

The actual process for the creation of the corrective and preventive action reports (CPARs) starts from the identification of the nonconformity which requests the opening of the CPAR. Firstly, the electronic report with a CPAR number is generated, then after the documentation of details related to the nonconformity, the documentation of the Immediate Actions is drafted and Root cause analysis, with an established deadline, is launched, before transmitting the report to the impacted persons. After the diffusion, the pilot documents the lines with the immediate actions and with the identified root causes. The root cause could reveal that both short term and long-term corrective actions are needed and, in this case, both lines for documentation are created; contrary, only the type of the needed action is opened.

After the implementing of the necessary action, the verification of this step is needed. Then, an evaluation of the solution effectiveness is performed, to check the possibility of reoccurrence. All the tasks for verification and effectiveness evaluation are closed before closing the CPAR.

The actual process is quite long, in matter of time, that's why the objective for closing minimum 90% from the CPARs in time is critically fulfilled with difficulty. In order to identify the weak part of the process, an analysis is needed using one of Six sigma tools [3, 6, 7], Fish Bone Chart (Fig. 7).

Based on cause-effect analysis, one may identify several items influencing the delay of the application of the solution for CPAR and also the closure in due time. The lack of implication from managers conducts to a lack of resources for tools or instruments. This is combined with the suffering team work and the environment delaying the process from logistical reasons.

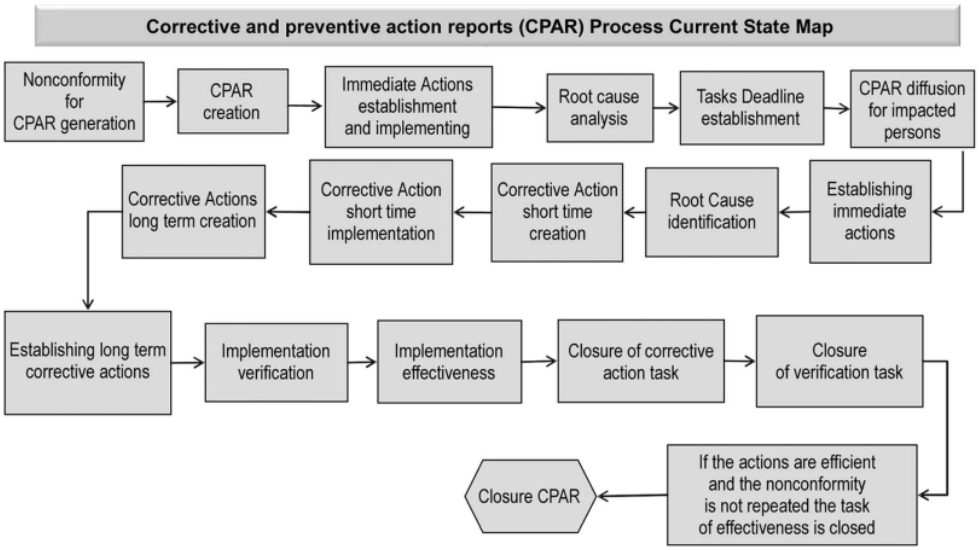

Figure 6. Corrective action reports flow

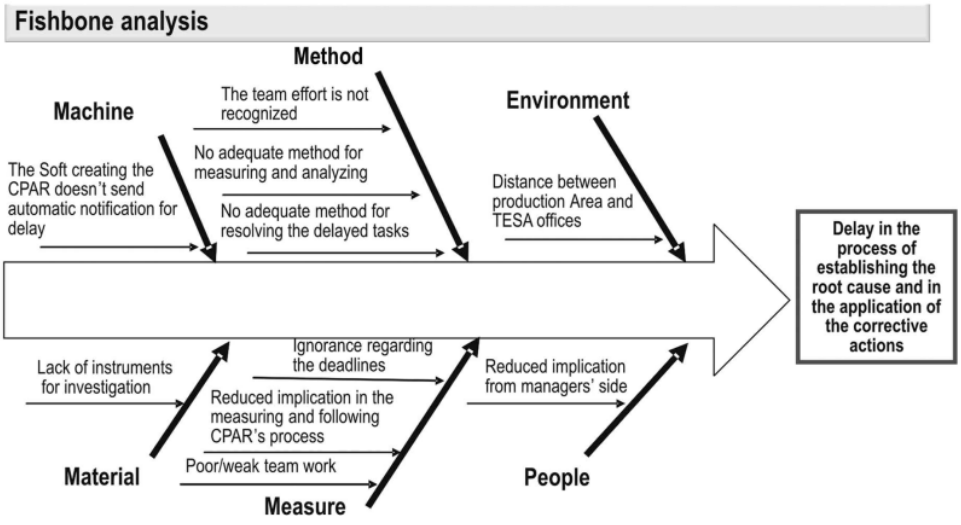

Figure 7. Fishbone analysis

Moreover, the competences for analysis, in order to identify the Root cause for the issues, are not appropriate. Without a proper root cause analysis, the deadline of closing this step involves more time, consequently the time for CPAR closing exceeds the target.

The second six sigma tool applied is FMEA [6, 12], as described in figure 8. According the FMEA, one has identified the same potential failure modes as in fish bone analysis, respectively the delay in the investigation part of the CPAR which is related to the poor root cause analysis performed at the beginning. After applying all the actions from FMEA, a new process flow is designed [9], as described in figure 9.

The new process map is much clear in matter of time deadlines and involves more clearly the contribution of the managers and the CPAR's responsible. A new item is the introduction of the 8D Methodology [6, 7]; this is needed when the Root cause identification is not simple and requests a more complex analysis. One may notice that a meeting is scheduled weekly in order to discuss the status of each step from CPAR completion process.

5. Assessment of the Improved Process through Internal Audit

Evaluating the obtained results after applying the improvement tools is a necessity. Thus, the process of recording and completion of CPARs (corrective and preventive actions reports) will be the subject to an Internal Audit aiming to determine if the improvements made are effective or not. The reference is chapter 10 Improvement [1]. The recommendation of the reference standards [2, 3] to use quality improvement methods are considered, so that a sound quality management system can be implemented through an effective planning and tools use.

The audit [4, 5] concluded that the Continuous Improvement

Failure Modes and Effects Analysis (FMEA) - Risk Assessment Matrix															
Process or Product Name:	The Corrective and Preventive Action Process Improvement					Prepared by:	Mitrache Ioana				Page	1	of	2	
Responsible:	Mitrache Ioana					FMEA Date					Rev #	0			
Process Step/Input	Potential Failure Mode	Potential Failure Effects	SEV	Potential Causes	OCC	Current Controls	DET	RPN	Actions Recommended	Resp.	Actions Taken	SEV	OCC	DET	RPN
Which is the scope of the process?	In which way the failure appears?	Which is the impact of the variable beginning in the customer satisfaction?	How strong is the effect for customers?	In which case the beginning had the failure?	How often the failure mode appears	Which are the existing procedures that may prevent the Failure Mode?	How efficient could be in failure mode detection?	RPN = SEV * OCC * DET	Which are the actions for apparition reduction or those for improvement detection?	Who is responsible for the root cause resolving?	Which actions were completed after RPN calculation?				
Investigate the CPAR tasks	The team effort is not recognized	Delay in investigation	4	Lack of team appreciation	3	Yearly employees evaluation	3	36	Motivation of the team	Mitrache Ioana	The team motivation in supporting of the blockage points which was poor				
Investigate the CPAR tasks	No adequate method for measuring and analyzing	Delay in investigation	7	Lack of needed information	7	Work instructions	5	245	In the actual process the work instructions will improve the monitoring part	Mitrache Ioana	The monitoring part which had insufficient tools for a better control	7	3	3	63
Investigate the CPAR tasks	No adequate method for communication	Delay in investigation	7	Lack of needed information	7	Work instructions	5	245	In the actual process the work instructions will improve the communication part	Mitrache Ioana	Communication and support from managers	7	3	3	63
Investigate the CPAR tasks	Poor/weak team work	Delay in investigation	3	Lack of team spirit	3	Meetings	3	27	Training for working in a team	Mitrache Ioana	Team work				
Process Step/Input	Potential Failure Mode	Potential Failure Effects	SEV	Potential Causes	OCC	Current Controls	DET	RPN	Actions Recommended	Resp.	Actions Taken	SEV	OCC	DET	RPN
Which is the scope of the process?	In which way the failure appears?	Which is the impact of the variable beginning in the customer satisfaction?	How strong is the effect for customers?	In which case the beginning had the failure?	How often the failure mode appears	Which are the existing procedures that may prevent the Failure Mode?	How efficient could be in failure mode detection?	RPN = SEV * OCC * DET	Which are the actions for apparition reduction or those for improvement detection?	Who is responsible for the root cause resolving?	Which actions were completed after RPN calculation?				
Investigate the CPAR tasks	Low implication in the measuring and following CPAR's process	Delay in investigation	7	The employees are focused on other tasks	7	Yearly employees evaluation and training	3	147	The method of CPARs monitoring will be modified	Mitrache Ioana	The actual process for CPARs which needed a better monitoring	7	4	2	56
Investigate the CPAR tasks	Ignorance regarding the deadlines	Delay in investigation	7	Lack of trainings	7	Work instructions trainings	3	27	Training for all the persons involved	Mitrache Ioana	The level of work instructions understanding	7	3	3	63
Investigate the CPAR tasks	Low implication from managers	Delay in investigation	7	The managers are focused on other tasks	7	Yearly evaluation	5	245	In the actual procedures will be changed the management involvements	Mitrache Ioana	The CPAR process delay during his steps of completion	7	3	3	63

Figure 8. Failure Mode Effect Analysis
Legend: CPAR = corrective and prevention action report; OCC = occurrence; DET = detection; SEV = severity; RPN = Risk priority number; MR = management responsible

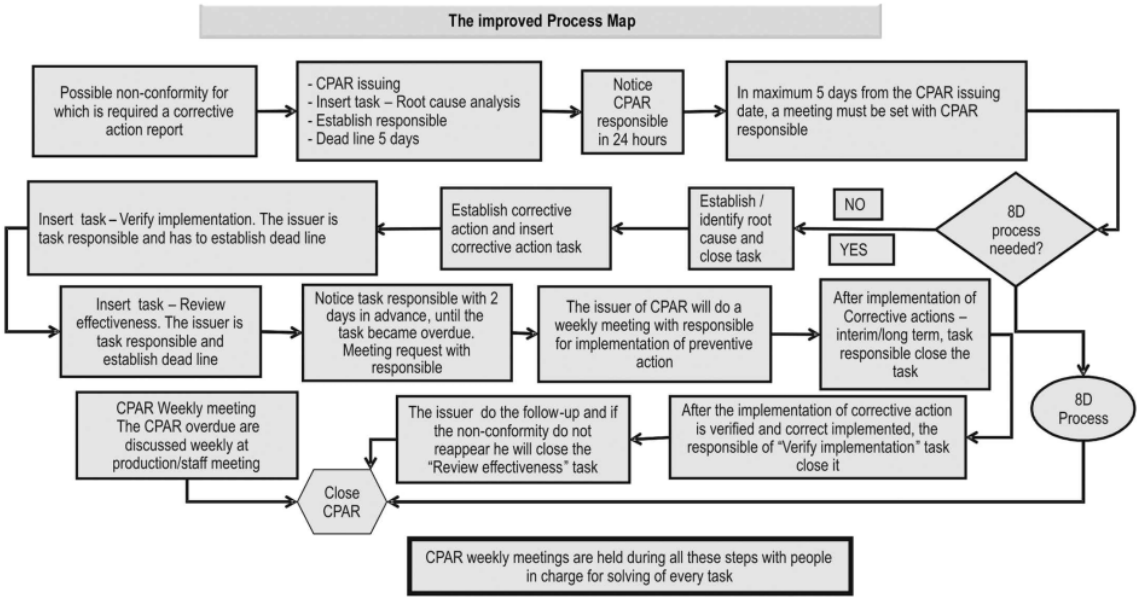

Figure 9. Redesign of CPAR completion process

Process is well defined and meets the requirements of the standard. The process of recording and completing the corrective / preventive actions is effective, the nonconformities being reduced. Weekly notifications are sent for of all those responsible for completing the Corrective / Preventive Reports in order to remind the deadlines of the actions.

The process was improved through a project with the following results: the number of delayed corrective / preventive reports decreased the number of mistaken tasks to identify the root cause and the number of delayed tasks for setting up immediate actions reduced, too.

The process has undergone an improvement stage that has proven to be effective, the results were visible in the client's beneficial reaction and increasing satisfaction. The project was efficiently applied, the time for CPAR was reduced and the process continues to improve reducing the time at minimum.

6. Conclusion

The case study presents the practical approach of a company that succeed in the global market firmly supported by the implemented Quality Management System that aims to monitor, measure and improve the performances in all the processes and product quality.

The company carefully examined which of the improvement methods may be adopted and the decision to combine fishbone analysis with FMEA lies in resources' reasons and the company's experience. In depth analysis, transparency and management involvement in facing the delays, the logistics, the tools use are quite important factors. Finally, internal audit to validate and sustain the effectiveness of the redesigned processes flows appears a key closing loop for objectives achievement and targets attainment.

Acknowledgement

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Quality Planning for the Production of Trailers

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Abstract

The paper focuses on applying the Quality Function Deployment (QFD) Quality Asset Method, a product-oriented product design that meets all the requirements of the customer organization that includes all members of the producer or vendor organization. It is a method that is an advanced form of comprehensive quality management. The QFD abbreviation indicates responsibility for producing a quality item. The context of the QFD corresponds to the definition of concepts related to the introduction of the quality feature (Delgado et al., 2003):
- *Quality – meet customer requirements.*
- *Function – what to do – Focus attention.*
- *Deployment – who will do it, when.*

Keywords: *Quality Function Deployment; trailers; customer requirements; design process.*

1. Introduction

The basis for the product quality planning is the matrix of matrices, which is a set of different matrix diagrams. The development of the practical use of the Quality Function Deployment (QFD) method in the 1970s and 1980s brought many new applications. By the end of the eighties, B. King had attempted to organize and to extend these possibilities into the so-called matrix of matrices that represents a coherent set of 30 different diagrams, see Figure 1 (Plura, 2012). In fact, the name of the "matrix of matrices" does not accurately describe the nature of this set of diagrams, considering it is not a set of 30 matrix diagrams, for which the analysis of the interrelationships between the two areas of the solved problem is typical. Some of the diagrams are basically tables in which information is collected in a transparent manner for further decision making or other graphical outputs. The existence of a matrix of matrices does not mean that every application of the QFD method makes it necessary to use all 30 possible applications. Depending on the specific assignment, it is necessary to select suitable applications directly targeted on the given problem. The combination of various applications allows you to get a comprehensive understanding of the problem one is solving and to ensure a comprehensive solution. The order of use of selected applications is essentially determined by their interconnectedness, when the results of previous applications are used (Plura, 2012).

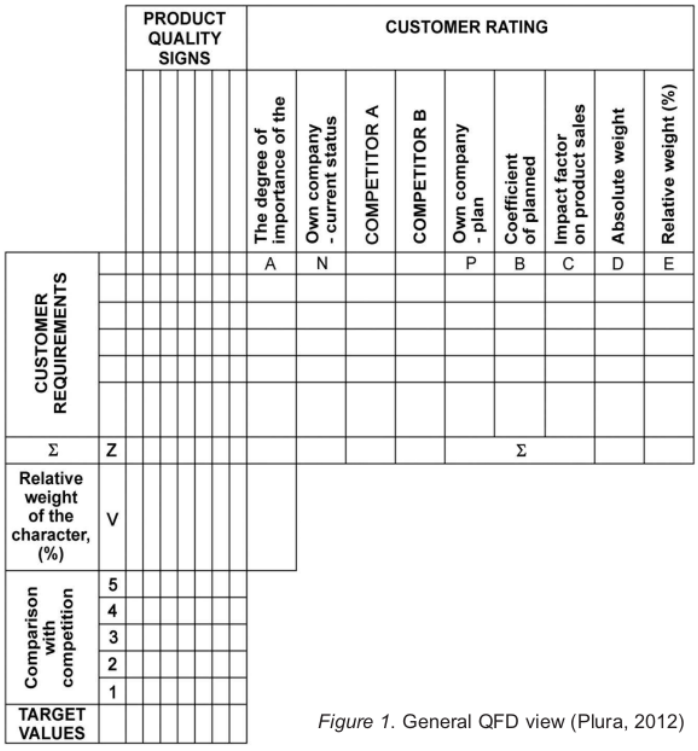

Figure 1. General QFD view (Plura, 2012)

2. Material and Methods

2.1. Quantification of the "House of Quality" assessment

The so called Quality Function Deployment is a method developed in Japan in the sixties that facilitates the translation of the customer expectations (voice of the customer) into specific characteristics of given product. In this way the customer requirements can be effectively captured and subsequently incorporated into the actual product. This article wishes to discuss the pros and cons of this particular approach and highlight some usage in practice. First the definition of QFD will be discussed followed by the discussion of the advantages and potential shortcomings of this method (Chavan et al., 2017).

As hinted previously, the QSD method was first used in Japan for the application in engineering. Thus a communication link was created, that can be used to translate customers' desires into specifications for designers to create technical concepts and subsequent final designs before the manufacturing phase. This helps to eliminate many potential production issues during the design process prior the actual manufacturing (Jaiswal, 2012).

The Quality function deployment enables to capture the main key aspects that need to be translated into characteristics of the final product. The incorporation of the key customer requirements into the final product helps to boost the competitive abilities of the product on the market. To effectively display the importance of each customer requirement for the final product the so called House of Quality can be utilized (Jaiswal, 2012).

The House of Quality is an elementary tool to effectively display the Quality function deployment. It is a matrix with customer desires on one dimension and engineering characteristics on the other dimension. The House of Quality is filled with the importance weights assigned to each customer desire, which are then summarized. In this way the correlations between customer desires and engineering characteristics dimensions can be effectively established (Ulrich et al., 2013).

In order to achieve accuracy to correctly identify key customer requirements, a number of methods was developed. Such accuracy is needed in order to achieve validation and verification and to properly assess the customer priorities. This is important as this affects all the subsequent steps in the design process. There are several studies that compare the accuracy of different methods to ascertain the importance of customer desires. Therefore, a combination of different methods to ascertain the importance of customer needs can be recommended for a more informed decision (Madzik et al., 2019).

Coefficient of planned improvement (B_i), (Plura, 2012):

$$B_i = \frac{P_i}{N_i} \quad (1)$$

where:

P_i – the assessment the organization plans to achieve in order to meet the organization's relevant requirement,

N_i – the current assessment of compliance with the relevant requirement.

This coefficient expresses the ratio of the planned assessment of the fulfillment of requirements to the current assessment. In order to determine the planned improvement, it is necessary to compare the current assessment of the fulfillment of individual customer requirements in our organization and at the competition. The score scale used to assess the fulfillment of requirements is between 1 to 5 points.

Impact factor on product sales (Di), (Plura, 2012):

$$D_i = A_i \cdot B_i \cdot C_i \quad (2)$$

where:

A_i – the degree of importance of the requirement,

B_i – enhanced performance planning factor,

C_i – the impact on salesability.

Three-step rating can be used:

- The strong impact reaches values 1.5.
- Medium impact 1.2.
- Minimum impact 1.

Meaning of individual requirements (E_i), (Plura, 2012):

$$E_i = \frac{D_i}{\sum_{i=1}^{n} D_i} \cdot 100\,(\%) \quad (3)$$

where:

n – total number of requests.

In the next stage, the individual fields of the matrix diagram in the places where the dependence between the customer requirements and the product quality characteristics is found are evaluated by computing the sum of the numerical coefficient expressing the degree of dependence (1; 3; 9) and the relative weight of the request (S_{ij}), (Plura, 2012):

$$S_{ij} = k_{ij} \cdot E_i \quad (4)$$

where:

k_{ij} – a coefficient expressing the degree of dependence between the requirement i and the quality symbol j.

The relative weight of the requirement (S_{ij}) expresses the importance of the individual quality labels in relation to the fulfillment of the individual requirements of the customer. These values are recorded in the second part of the relevant fields where (Plura, 2012):

$$Z_j = \sum_{i=1}^{n} S_{ij} \quad (5)$$

The importance of each quality label in terms of meeting all customer requirements describes the relevant values of the sum Z_j. Then V_j is the relative weight of the quality label (Plura, 2012):

$$V_j = \frac{Z_j}{\sum_{i=1}^{n} Z_j} \cdot 100\,(\%) \quad (6)$$

where:

m – the number of quality characters.

3. Results and Discussion

The production of trailers is divided into three main sections, Figure 2: production, assembly and dispatching. The production area also includes the reception of goods (material). In regard to

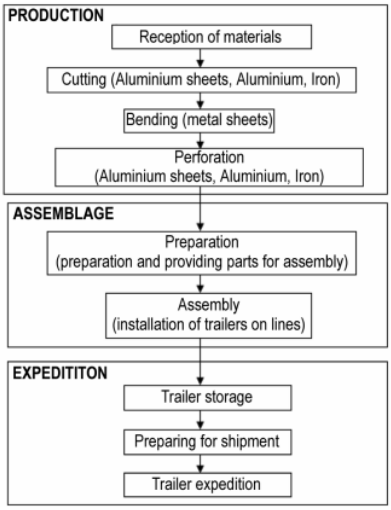

Figure 2. Production stages of trailers (Halekova, 2018)

the material supply, the external trans-ports is dominant, as the material that is supplied must be predominantly in a closed (tarpaulin) trailer to avoid external influences (weather, climate change, etc.), but can also brought by exposed semi-trailers.

The QFD method will be applied to the production of trailers. A choice of three materials – aluminum, steel or wood – is available for production. Versions of trailers are divided into 2 categories: a low-floor or high-lift trailer. Tilting can be manual or electrical.

Trailer types (Halekova, 2018):

- Trailers for the transport of motor boats.
- Trailers for the transport of vehicles.
- One motorcycle trailer.
- Two motorcycle trailer.
- Tandem trailer.
- One-axle trailer.
- Animal trailer.
- Multipurpose trailer.

In order to ensure more efficient production process, it is necessary to identify and monitor the relevant quality features. Among the features of the product quality, trailers include:

- Load.
- Strenght of joints.
- Carrying capacity.
- Sheet strength.
- Electrical wiring.
- Lighting.
- Ball coupling.
- Offset.
- Straight shaft.

		QUALITY SIGNS									CUSTOMER RATING								
		Load	Strength of joints	Carrying capacity	Sheet strength	Electrical wiring	Lighting	Ball coupling	Offset	Straight drawers	Degree of importance	Own company - reality	Competitor A	Competitor B	Own company - plan	Coefficient of planned improvement	Impact factor on marketability	Absolute weight	Relative weight (%)
CUSTOMER REQUIREMENTS	Special design				◎	◎				○	2	2	3		1	0.50	1.20	1.20	5.43
	Special material		○								3	4	2		3	0.75	1.50	3.38	15.28
	Trolley weight	◎		○	◎						5	4	3		3	0.75	1.50	5.63	25.46
	Form of delivery										2	3	2		1	0.35	1.00	0.66	3.02
	Product price					○				○	4	4	3		2	0.50	1.20	2.40	10.87
	Opening mechanism					◎					4	3	2		2	0.66	1.50	4.02	18.20
	Shock absorber (Suspension)	◎						○	◎		4	3	1		3	1.00	1.20	4.80	21.73
Sum		424.71	45.84	76.38	366.66	245.28	0.00	65.19	195.57	48.90	1468.5						**Sum**	22.080	100.00
Relative weight of the character (%)		28.92	3.12	5.20	24.97	16.70	0.00	4.44	13.32	3.33	100.00								

◎ - Strong relationship (9) ○ - Average relationship (3) △ - Weak relationship (1)

Figure 3. Implementation of the QFD method for the production of trailers

In the Figure 3 a quality house analysis shows that among the most important customer requirements are:

- Carriage weight has the highest relative weight of 25.46%.
- Suspension relative weight is 21.73%.
- Opening mechanism – relative weight is 18.20%.

Among the most important quality features to meet customer requirements are:

- Load the relative weight is 28.92%.
- Sheet strength the relative weight is 24.97%.
- Electrical wiring the relative weight is 16.70%.

Quality planning is primarily focused on the individual phases of the production system, to balance the chain of action relationships on the facilities, between people, on a continuous basis in the system. Planning as a managerial function is focused on the future of the entire organization. An inconsistent and improper plan can cause a loss of resources, energy and bad reputation. The basic requirement of quality management systems is systematic planning (Zimon, 2018). Planning contributes to the preparation of changes that are made on the basis of past and current knowledge. Their essence is to determine the objective orientation of activities for the following periods in order to monitor the results achieved, to evaluate them for improving the quality of the future plan. The quality plan must, on the one hand, maintain the consistency of inputs in relation to processes and on the other hand the consistency of the processes in relation to the outputs with which the customer will be satisfied. The quality in the production process should cover the following:

- Entry – technical inspection – includes inspection of all components of the participating production (sensory control, laboratory control, completeness of supplies).
- Material supply – durability, reliability and safety depend on the quality and quantity of the product components.
- Technical base – robotics, automation as well as equipment and machinery level.
- Technology – in terms of financial liquidity of the enterprise, economic instability of production and future parameters of the product.
- Frequent production failures are caused by personnel, qualifications, attention, reliability, performance and human factors.
- Operating programs – energy, organization, level of operation and circulation and production logistics.
- Intra-company transport – the correct logistic movement of the material from its input, through all processes to the output of finished products from the enterprise – manipulation, flow and synchronization.
- Storage – central warehouses, intermediate stores, dispensers and suitable contents of stored ingredients up to Just in Time (JIT).
- Intraoperative control – input of material – assembly, adjustment of equipment, elimination of unsuitable products.
- Intra-enterprise management – aggregate quality factor, operational – dispatching management, coordination of production and non-productive activities, material and non-material stimulation of workers.
- Outward inspection – expedition – conditions of delivery, assembly, packing, mode of transport, accompanying documentation.

4. Conclusion

The QFD method has highlighted the most important customer requirements for the quality of trailer trucks, including, in particular, the weight of the trolley, the shock absorber and the opening mechanism. The identified customer requirements indicate better communication and transfer of information between the different stages of product design and production. The most important features of quality in meeting customer requirements include load, surface strength and electrical wiring. Identified quality attributes contribute to effective transformation into specific product technical parameters (Klos et al., 2017).

The advantages of using the QFD method include:

- Focusing on the customer.
- The exclusion of technological and design changes.
- Creating a set of information to improve quality planning.
- Early description of the areas of risk and quality signs that affect conflict.
- Lower costs for the production and development of new products.
- Eliminating problems when starting production.
- A small number of issues in the distribution network.

The created matrix diagram, Figure 3 provides the initial information on where product quality features reflect customers' requirements. Analysis of the processed matrix chart allows to specify the product quality features that are most important for meeting the appropriate set of customer requirements. In the framework of the "House of Quality", the interrelationships between the individual quality signs are analysed. Based on the information on the technical parameters of competing products, the development department prepares a comparison with the competition in terms of technical possibilities to achieve individual quality features of the product. The developed "House of Quality" provides enough information to suggest appropriate target values for the quality of trailers.

When designing the target values, it was necessary to take into account:

- The importance of the individual features of quality.
- Comparison with competitors.
- Relationships with other quality features.
- Degree of difficulty in relation to security.
- Proportionality in relation to the price.
- Manufacturability.

The created matrix diagram provides the initial information on where product quality features reflect customers' requirements.

Acknowledgement

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Applying the Kano Model to Quality Improvement within Higher Education: An Applied Study in the World Islamic Science and Education University – Jordan

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Abstract

The aim of this study was to determine the requirements of students with regards to the quality of services provided by the Management Department at the World Islamic Sciences and Education University as well as the role of each requirement needed to achieve student satisfaction. To carry out this study, the expectations and perceptions the students had regarding the quality of services provided compared to what was actually provided were analyzed. The negative gaps were then identified and the resulting characteristics and requirements of these gaps were introduced into a two-dimensional Kano model in order for the customer's voice to be measured. The quality of the requirements needed was then divided into five categories. In order to be more reflective of reality, the best value and worst value of each requirement was calculated. This helped to determine the role that these requirements played in either increasing or reducing the satisfaction or dissatisfaction of students.

Keywords: *Kano Model; quality; higher education; World Islamic Science and Education University; Jordan.*

1. Introduction

Quality has become the main factor for customers when making the choice of selecting products. Organizations have begun to venture and focus in this area in order to determine the factors that make customers buy their products as oppose their competitors' products. The process of researching the factors that govern the customer's decisions involved carrying out a comparison between the quality of a good and/or product. This was shown to be very important as customer dissatisfaction with the product means that the organization will face sale losses which can in turn affect the production of the product (Al-Hawary, 2013; Abbad & Al-Hawary, 2014).

Higher education institutions have become more and more aware of the changes and challenges that are facing organizations. The main change and challenge that has been acknowledged has been the effect that an increase in competition between organizations has. This increase in competition forces organizations to become more susceptible to change and development. Organizations must focus on their customers in order to survive and develop their capabilities. As a result, institutions of higher education are trying to identify the important characteristics that should be present in a service in order to help comply with customer's needs, thus helping to increase their reputation.

One of the most important challenges universities tend to face is finding the strategy required to design studies that enable them to identify and clarify the needs and expectations of their current and future customers. Management literature and previous studies on the quality of education services make it clear that the improvement of higher education services has been addressed from several perspectives and in different ways by many researchers. Many researchers have addressed student satisfaction by researching various factors that influence student satisfaction with the services offered at different universities in different countries. Students cited various factors such as teacher characteristics, content of instructional materials, teaching methods and assessment methods (Butt et al., 2010; Liu, 2008; Pavlina et al., 2011; Parpala et al., 2007; Ghiat et al., 2011; Buck &Trauth-Nare, 2009; Mahboube, 2012; Anna, 2018). There have been many researchers that have dealt with students in university education and their satisfaction with the services that their universities offer. However, only a few of them dealt with factors that contribute to the increase or decrease of student satisfaction. Therefore the researcher found it important to identify the factors that affect students' satisfaction with the quality of services provided in university education.

This research aims to identify the ideal situation and quality that students seek from services provided by the World Islamic Sciences and Education University. This was carried out as a field study and based on the student's perspectives. The services were distributed according to their type and nature according to the Kano model. The services were then classified according to their importance and impact on increasing or reducing student satisfaction levels and were compared to the current situation in order to identify the gap between what students expect from the quality of services offered already and those identified after the experiment. This study aimed to help increase students' satisfaction with the quality of services provided by the university.

2. The concept of quality

The scholars did not agree on one definition of quality because the concept of quality is related to customer's requirements and expectations which is subjective. However, there is a general consensus that quality aims to satisfy the beneficiaries (Al-Hawary & Harahsheh, 2014; Al-Hawary & Al-Menhaly, 2016). One of the most popular definitions of quality is

the definition made by the American Society for Quality, which the researchers pointed out (Render & Heizer, 2000, p. 171). According to this definition, quality is the body and the overall characteristic of a product or service that appears and reflects the ability of this product to satisfy explicit or implicit needs. Quality has also been defined as; degree of preference, match usage, matching requirements, and customer focus.

In this study, the researcher focuses on the client to create satisfaction and happiness by satisfying his desires and reducing his levels of resentment. Thus, the definition of quality here is a set of comprehensive characteristics in goods and services that affect the meeting of the explicit and implicit customer needs. The concept of quality is related to the beneficiaries' perspectives. It can therefore be said that the concept differs according to the individual, a group or society as a whole.

3. Quality from the perspective of the customer

The customer considers that quality is the organizations ability to meet the needs and satisfaction desired. This can be through the use of various competitive strategies that challenge the competitive market conditions to create customer value (Al-Hawary & AL-SMERAN, 2016; Alshurideh et al., 2017; Alolayyan et al., 2018; Al-Hawary & HUSSIEN, 2016). It is known that the smaller the distance between the organization and its customers the greater it can hear and realize the customer's needs and views. In turn, the organization will be able to offer products that suit those needs in the appropriate form, time, place and price.

4. Customer satisfaction and the way to happiness

Focusing on the needs of the customer is the driving force behind the term of quality and product improvement. The organization must be good at listening to customer needs and desires. In order to do this, a full understanding of the customer's internal processes as well as their future needs to be determined (Al-Hawary, 2013; Metabis & Al-Hawary, 2013).

To translate customers' desires into quality standards, marketing management is required to determine what the customers are requesting this can be done by studying and identifying the customer's behavior and utilizing this knowledge into appropriate product designs that satisfy customer desires at the required level. When making a purchase, the customer will be aware that the organization is constantly trying to satisfy the needs and desires of its customers. This will lead to the belief that the product he acquired will always be the best. The Kano model reflects this customer importance and ensures that customer satisfaction is a primary goal in achieving success and continuity.

Evans asserts that the relationship between quality and customer expectations for the product is determined by three basic phases (Evans, 2005: 48):

1. Study customers and understand their requirements and expectations about the product.
2. Design the product according to the customer's expectations.
3. Monitor manufacturing processes to ensure that products are manufactured to fit pre-set specifications.

5. Kano Model

There are many models that have studied and categorized customer requirements to help organizations understand their customers. Among these is the Kano Model. This is a model used by many researchers and practitioners to understand their customers' voice in order to influence their satisfaction levels (Arash, Somaye, Hossein, Mahmoud, Rahbar, 2017; Feng-Han, Sang-Bing, Yu-Cheng, Cheng Fu, Jie, Jiangtao, Zhiwen, Yong, 2017; Hyejong, Junghwan, Youngjung, 2018).

The KANO Model classifies the characteristics of services or products by testing the relationship between customer satisfaction and the function performed by the product or service. These characteristics are classified in six levels depending on the degree of satisfaction achieved. The first level includes the elements of the most attractive quality as well as the characteristics of the service or the product which leads to increased customer satisfaction. The second level includes the elements of quality which have a positive linear relationship with customer's satisfaction. Therefore, the more these elements are applied the higher the levels of customer satisfaction and vice versa.

The third level is the quality that all elements must achieve and is unavoidable in any service or product. This means that the loss of these elements will reduce customer satisfaction levels and the presence will not increase satisfaction levels.

1. Basic Factors: Dissatisfaction factors are basic requirements that must be well mastered but this does not create satisfaction because the client believes that their existence is necessary.
2. Attractive factors: Satisfaction factors contribute to the increase in satisfaction and happiness of the customer, whereas, if it not available, does not create the customer's resentment. All marketing efforts focus on this factor in order to make the organization superior.
3. Performance factors: These factors, which if found, will improve the product performance and thus increase the customer's satisfaction. When it declines, the performance of the product well decline and thus decrease customer satisfaction.

The Kano Model evolved over several periods of study and use by researchers. Wittell and Löfgren in 2013 and Potra et al. in 2017 have shown that the Kano Model has received considerable attention from researchers and academics. The KANO Model works primarily to classify services or product characteristics in order to test the relationship between customer satisfaction and the function performed by the product or service. These characteristics are classified into six levels depending on the satisfaction degree that these characteristics achieve for the customer:

1. Must be (M): These are the necessary requirements that must exist and where their absence creates discomfort for the customer, i.e., their absence may create a state of dissatisfaction with the customer while their presence does not cause an increase in the levels of satisfaction.
2. One-Dimensional (O): The characteristics at this level increase satisfaction levels while their absence leads to increased levels of dissatisfaction. Such characteristics create customer loyalty.
3. Attractive (A): Characteristics at this level are welcomed by customers while their absence may not cause any satisfaction level disturbance. These are the customers' characteristics for happiness.
4. Reverse (R): Characteristics at this level should be eliminated because they destroy customer satisfaction levels and their absence is better.
5. Indifferent (I): These characteristics that do not affect the satisfaction levels neither by their presence or their absence.
6. Questionable (Q): The result of this question indicates that the question was not correct or that the result (the answer) was not logical (Wang & Ji, 2010; Garibay et al., 2010; Rashid et al., 2010;Haegeun Song, 2018)

Using the Kano method, customers' requirements are determined by asking double questions. The first question was always in the form of a positive question and the second in a negative form, both regarding the same item. There were five possible answers to each question. These included: Must be

available, neutral, desirable and undesirable. The answers were then integrated until the classification of customer requirements into six levels according to their answers, was possible.

6. Research questions

1. What are the satisfaction levels of the university students with regards to the current situations compared to the ideal situations as indicators of the quality of the business department and what it offers?
2. According to the Kano Model, where do the indicators with a meaningful negative gap belong to with regards to quality attribute?
3. What is the extent that any one of these indicators is decreasing customer dissatisfaction?

7. Research methods

In order to answer the research questions, the researcher adopted a special methodology consisting of four steps. First, the researcher reviewed previous studies and theoretical literature on the research subject and consulted with academics and experts in the field in order to propose different quality characteristics that may be used to collect primary data from the research community (the university). In the second step, the researcher designed a double question questionnaire that was distributed to the respondents who consisted of students studying at the Department of Business administration at the Faculty of Finance and Business in the World Islamic Sciences and Education University. The students selected had finished at least one semester. The questions asked where regarding the characteristics of the quality of service. Each question was designed in both the negative and positive form and the data collected was to be distributed between the six levels of Kano Model. In step four, the researcher carried out the necessary analysis of the retrieved questionnaires which were used to reach the last step, the results. In this step, the classification of characteristics was carried out and comparison was made. The information obtained provided the university with guidance as to where improvement was required in order to increase customer satisfaction and thus achieve competitiveness and success.

The study population was all the bachelor's level students in the Business Administration Department of the Faculty of Finance and Business at the University of World Islamic Sciences and Education University. In order to determine the sample number, the university's statistics from admission and registration unit was reviewed. The number of students in the Department of Business Administration was established to be 300, 135 of whom were in the second semester or above. The questionnaire was distributed to all participating students to take their responses and so that the outcomes could be analyze and the research objective reached.

8. Study Tool (Kano Questionnaire)

This questionnaire is designed to include a pair of questions about each of the customer's requirements. The researcher found that the statements that measured the quality of service provided in the Department of Management were based on previous studies (Mahboube, 2012). Professors concerned with the subject of quality were asked to ascertain the relevance of the statements to the study. Each question consisted of two parts: The first asking how the customer would feel if the specified property was present in the service and the second how they would feel if it was absent. These questions were answered by selecting the suitable answer from a number of multiple choice options. An example of the questions asked: 'How would you feel if we provided you with updated teaching materials?' An example of the answer options: Better, it should be so, neutral, I can live without it, and I do not prefer it. The second part of the same question was: 'What would you feel if we did not provide you with updated teaching materials?' The choices of the answers were the same as the first question. Responses are collected from customer trends and then assessed through quality dimensions based on customer responses to the two questions as described above relating to different quality characteristics to be studied. If the customer answered the question 'what would you feel if we provided you with updated teaching materials?' with 'I prefer to' and the answer of the opposite question of 'what if we did not provide you with updated teaching materials?' with 'neutral', the two answers were combined together and used to determine the type to which this property belongs, for example 'A', which means that it is attractive. The same analysis was carried out for all the questions. If the merging of the two answers established the classification 'I', this means that the property was not important and does not make a difference for the customer and can do without it. Therefore no extra value is paid when you offer this service. As for the classification 'Q', it establishes that the question was not raised correctly, that it was not prepared in an appropriate manner or that the customer did not understand the question or that the wrong answer was given by mistake. If the answers to both questions got the 'R' tag, this shows that the quality of service was not only undesirable but the customer expects to reverse it completely.

9. Best value and worst value

Factors that increase satisfaction or reduce customer dissatisfaction can be identified by measuring the best value and the worst value for each quality indicator. The best value can be calculated by collecting responses to 'attractive' and one-dimensional values and dividing them by the total of one-dimensional responses which include the responses of 'must-be' and 'indifferent' responses. The worst value can be calculated by collecting the 'must-be' and 'one-dimensional' responses and dividing them by the total of One-dimensional values which include; 'must-be', 'attractive' and 'indifferent'. Based on these equations, the best value indicates the degree to which customer satisfaction will be increased by improving the quality factor in question, whereas, the worst value will indicate the degree to which customers will be less satisfied when they are not interested in improving the quality of the factors individually.

To explain, the numbers of the worst value and the best value range from zero to one. The nearer the number to one the greater impact it will have on increase customer satisfaction. The closer the value of the worst value to one, the more important it will be to reduce the levels of customer dissatisfaction. However, if the value is zero then the element has a weak effect on satisfaction levels. The calculation of these values enables us to understand the extent to which the studied characteristics affect customer satisfaction and thus help us to focus on better values and improve them to protect customers from the worst values.

10. Statistics and results

The perceptions and expectations about the quality of educational services, as a field study involving university students, were compared using the highest gap and the lowest gap determined.

In the first phase of the study, the student's perception and expectation from the field of educational services were compared. Using a correlated t-test, 41 of the factors in the table were analyzed and used as program quality indicators to identify customer requirements. The results revealed that 37 items out of 41 had a negative gap at a significance level of 0.05 and were therefore established as the representatives of customers ($p < 0.05$).

Row Requirements	Means of perceptions	Means of expectations	Mean gap	T	Sig.
1. Excellent universities will provide more courses in the scientific stream throughout the program.	3.51	3.91	-0.416	-3.488	0.001
2. Excellent universities will provide incentives and more advanced facilities to improve the educational and research activities of students (e.g. providing coupons for book, credits for duplication, etc.)	3.42	4.20	-0.784	-6.752	0.000
3. Excellent universities will provide updated material regularly and offer follow up of modern scientific findings.	3.44	4.32	-0.451885	-7.764	0.000
4. Excellent universities will provide a more suitable setting for the business lab (improved lighting, ventilation, chairs, etc.)	3.55	4.41	-0.860	-7.138	0.000
5. Excellent universities will provide more appropriate settings for the site (lighting, ventilation, chairs, etc.)	3.44	4.35	-0.912	-7.77	0.000
6. Excellent universities will provide more Acquisition of IT skills by the students.	3.57	4.23	-0.659	-6.033	0.000
7. Excellent universities will provide a more appropriate setting and for the library. Light, ventilation, chairs, voice control, etc. should be strictly controlled.	3.78	4.30	-0.526	-5.311	0.000
8. Excellent universities will provide a wider variety of courses during the program that students may select.	3.66	3.92	-0.257	-2.424	0.017
9. Excellent universities will provide appropriate mechanisms to students that will help them to cope with their problems in life and to make sensible decisions.	3.55	4.00	-0.451	-4.049	0.000
10. Excellent universities will be more accepting of criticisms (for professors).	3.58	3.86	-0.287	-2.230	0.027
11. Excellent universities will have high ability professors with regards to motivating the students about any issues relating to subjects.	3.78	4.17	-0.385	-3.526	0.001
12. Excellent universities will provide the correct settings for the classroom. These settings include; light, ventilation, chairs, sound control etc.	3.40	4.09	-0.694	-5.779	0.000
13. Excellent universities will show high abilities in relaying information by the professors to the students	3.83	4.25	-0.422	-4.122	0.000
14. Excellent universities provide the students with the skills needed to understand how to conduct learning learn as oppose to what to learn.	3.63	4.88	-0.443	-3.724	0.000
15. Excellent universities will provide reliable assessment standards early on in the academic year.	3.67	4.08	-0.408	-3.136	0.002
16. Excellent universities will provide more friendly communication between professors and students.	3.87	4.30	-0.426	-4.211	0.000
17. Excellent universities will exist more Encouraging the students to be involved in the teaching-learning process	3.87	4.13	-0.266	-2.517	0.003
18. Excellent universities will provide the right amount of time to study a subject matter.	3.69	4.04	-0.349	-3.095	0.002
19. Excellent universities will carry out process-oriented assessments in which a high portion of the final score is to be attributed to activities conducted throughout the semester	3.54	3.94	-0.398	-3.595	0.000
20. Excellent universities will exist more interested professors in answering the student's questions	3.8	5.10	-0.303	-2.818	0.006
21. Excellent universities will enable students to carry out independent research in business studies.	3.84	4.14	-0.306	-3.152	0.002
22. Excellent universities will provide clear assessment standards.	3.68	4.13	-0.452	-4.453	0.000
23. Excellent universities will allow more students to teach the courses of business.	3.76	4.04	-0.277	-2.485	0.014
24. Excellent universities will provide more horizontal order and coordination of subjects studied during the program.	3.81	3.97	-0.154	-1.689	0.094
25. Excellent universities will provide more coordination between the content of exams and the material taught.	3.83	4.09	-0.258	-2.534	0.012
26. Excellent universities will encourage practical activities such as research studies and will account for this in the exam score.	3.64	4.02	-0.379	-3.220	0.002
27. Excellent universities will ensure an appropriate level of course materials so they are neither too simple nor too difficult.	3.75	4.02	-0.262	-2.493	0.014
28. Excellent universities will provide more developmental evaluations (mid-term exams).	3.64	3.76	-0.124	-1.081	0.282
29. Excellent universities will allow for changes and developments with regards to how the professor will convey the course material.	3.90	4.17	-0.263	-2.576	0.011
30. Excellent universities will take into account the physical per capita and therefore provide appropriate classrooms.	3.74	4.11	-0.376	-3.296	0.001
31. Excellent universities will have a relevant syllabus for professors to follow.	3.85	4.20	-0.346	-3.189	0.002
32. Excellent universities will provide developed and advanced mental measurement tools in the business lab.	3.5	4.04	-0.540	-4.914	0.000
33. Excellent universities will provide regular checks on the content of the course material.	3.59	4.15	-0.555	-5.457	0.000
34. Excellent universities will provide students with methods of enhancing learning processes.	4.00	4.09	-0.090	-0.226	0.822
35. Excellent universities will ensure the availability of mental-educational measurement tools for students.	3.57	4.06	-0.491	-4.622	0.000
36. Excellent universities will provide the principles and fundamentals of business administration as a science and focus on the skills and knowledge required.	3.80	4.23	-0.432	-3.998	0.000
37. Excellent universities will carry out regular evaluations of educational progress of the students and offer feedback.	3.53	4.15	-0.618	-6.003	0.000
38. Excellent universities will provide more encouragement to their students to think.	3.61	4.13	-0.521	-5.013	0.000
39. Observing the order and discipline of the professor while entering and leaving the classroom.	3.64	3.92	-0.278	-2.431	0.016
40. Excellent universities will provide more coordination and integration of course materials during the program.	3.69	4.06	-0.364	-3.296	0.001
41. Excellent universities will attribute a suitable final score to the final exam.	3.83	3.98	-0.153	-0.711	0.478

The analysis shows the difference between the expectations of the students and what they actually found in the quality of services provided. It was shown that many requirements obtained negative gaps and achieved a gap between the ideal situation of what students want and the real situation. The gap was greatest for the requirement number five followed by the requirement four, two and finally the number six.

As shown in the table, there are some requirements that have a low negative gap. Requirement 34 had the lowest negative difference followed by 28, 41 and finally 24, which is excluded in the second phase of this study. This was done in order to focus on the requirements that affected the confidence levels that were considered in the research.

The researcher asked the two pair questions for about the 37 items that have a negative gap at a confidence level of 95%. These elements were introduced into a two dimensional model in order to show to which class of customer requirements each of these elements belongs to. The results of the study showed that 19 of these requirements were rated 'O', since the presence of these requirements increased student satisfaction and where their absence increases their dissatisfaction. These variables were found to create student loyalty. At the same time, five of these requirements were rated 'A' as these variables created customer delight and at the same time did not create dissatisfaction. Eleven variables have a rating of 'I' and one variable had an 'R' classification. This means that this variable must be absent because its existence creates dissatisfaction. Finally one variable was rated as 'M'. This rating should be taken care of because its presence is necessary and its absence creates a state of dissatisfaction.

To be more accurate and to make it more expressive of the role played by each variable in increasing the satisfaction or

dissatisfaction of students, the best value and the worst value were calculated for each variable in order to clear the contribution of each variable in increasing or decreasing the students satisfaction. This was done in order to provide more accurate information to the decision makers at the university.

11. The Results of Kano's Questionnaire Analysis

WORSE	BETTER	total	Grade	Q	R	I	A	O	M	Code
				Questionable	Reverse	Indifferent	Attractive	Performance	Must-Be	Result
-0.24	0.29	135	R	5	58	45	10	11	6	# 1
-0.4	0.6	135	A	8	5	36	38	35	13	# 2
-0.55	0.55	135	O	4	8	36	19	49	19	# 3
-0.56	0.54	135	O	6	4	31	24	43	27	# 4
-0.56	0.57	135	O	11	4	30	23	45	22	# 5
-0.51	0.66	135	O	4	8	27	33	48	15	# 6
-0.57	0.56	135	O	5	8	31	22	46	23	# 7
-0.38	0.5	135	I	6	24	45	20	32	8	# 8
-0.41	0.61	135	O	9	10	36	32	39	9	# 9
-0.41	0.51	135	I	14	12	39	25	30	15	# 10
-0.41	0.61	135	O	6	15	33	34	36	11	# 11
-0.49	0.5	135	I	11	20	27	26	26	25	# 12
-0.55	0.68	135	O	7	13	26	26	52	11	# 13
-0.5	0.54	135	O	4	18	33	24	37	19	# 14
-0.35	0.52	135	I	10	25	35	30	22	13	# 15
-0.42	0.59	135	O	6	18	35	29	36	11	# 16
-0.33	0.63	135	A	11	19	35	36	31	4	# 17
-0.34	0.54	135	I	7	18	41	32	27	10	# 18
-0.37	0.44	135	I	6	25	48	18	28	10	# 19
-0.53	0.55	135	O	5	25	29	20	38	18	# 20
-0.43	0.59	135	O	7	24	33	26	35	10	# 21
-0.46	0.55	135	O	8	23	35	21	36	12	# 22
-0.42	0.6	135	A	7	21	26	36	28	17	# 23
-0.52	0.59	135	O	6	22	29	22	41	15	# 25
-0.31	0.5	135	I	6	22	43	31	23	10	# 26
-0.43	0.39	135	I	10	29	37	18	19	22	# 27
-0.52	0.65	135	O	6	29	23	25	40	12	# 29
-0.59	0.57	135	O	9	24	26	16	42	18	# 30
-0.19	0.54	135	I	6	20	45	43	16	5	# 31
-0.3	0.56	135	I	7	19	43	33	28	5	# 32
-0.41	0.63	135	O	8	23	29	32	34	9	# 33
-0.62	0.64	135	A	9	25	28	37	28	8	# 35
-0.39	0.61	135	M	7	19	33	32	34	10	# 36
-0.48	0.66	135	O	7	24	24	30	39	11	# 37
-0.41	0.62	135	A	10	19	30	33	33	10	# 38
-0.42	0.49	135	I	5	28	39	21	29	13	# 39
-0.55	0.6	135	O	4	21	27	22	45	16	# 40

12. Conclusion

This study aimed to identify the needs and requirements of in the Department of Business Administration at the University of Islamic International Sciences. This was done in order to determine the role of each factor needed in satisfying the needs and desires of the students and to create loyalty and satisfaction. For this purpose, gaps were calculated by carrying out a comparison between the expectations of the students about the service to be provided in the university and the department and their feelings about what they have already received from the services. In order to reveal the most important quality requirements that reflect the voice of the customer, the results were analyzed and the difference between what the students expected and what they have already obtained was determined.

The requirements were then applied to the Kano Model and were categorized into five types: Attractive, one-dimensional, must-be, reverse and indifferent elements. At this stage, 19 variables were given a rating of 'O' and one variable was rated 'A'. These qualities should be taken into account and worked on as they have a big impact on student satisfaction. Furthermore, it was established that the strategies of decision makers should be directed towards development and change in order to avoid the students' dissatisfaction. To do this, the implementation potential and the university's available resources aiming to create students' satisfaction and happiness must be acknowledged.

Finally, this study helps decision makers to prioritize and direct their competitive strategies towards creating the loyalty and satisfaction of students in order to help them raise their competitiveness among universities. The results of this study should contribute to raising the quality of services provided in the studied department and priorities should be set. From this study, it is hoped that decision makers will take the outcomes into account and establish an implementation plan to improve the quality of services provided to their students.

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Strategy Improvement of Competitiveness SMEs of Ship Component based on Value Chain Performance

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Abstract

The quality of ship components is a key requirement to win the competition in the global market. In the shipbuilding industry, quality ship components are an important factor in sail safety. To produce a sustainable standard quality ship component product, good performance from its value chain is required. This study aims to determine the strategy of increasing the competitiveness small and medium industries of ship components through the development of a value chain. The research method uses a case study approach to describe the value chain small and medium industries of ship components, value chain economic analysis and review of supporting policies to determine competitiveness strategies. The recommended strategy leads to the development of existing ship component products through certification and diversification strategies to capture market opportunities from the additional varieties of the other ship components which are still wide open.

Keywords: *competitiveness; SMEs of ship component; value chain; economic analysis*

1. Introduction

Currently, the world's shipping industry is still controlled by three countries called the Asian Triangle namely China, Japan, and Korea, with a market share of up to 90 % of the total number of ship orders worldwide (Prasetyo, 2018). As one of the longest coastline countries in the world, Indonesia should have the potential to compete in the world's shipping industry. In line with the Indonesian government program in realizing the sea toll program and as the ruler of the world maritime axis, the needs of ships will increase rapidly. Shipyard industry becomes an important foundation in supporting the program. However, the development of the shipbuilding industry in Indonesia is still hampered by the presence of ship components that most still have to import.

Based on previous research, it is said that the most influential factor to shipbuilding competitiveness is the factors related to ship's ship components including price, quality, and availability of goods (Chou, 2004). The main problem of the domestic shipping industry is that about 70 to 80 percent of shipboard-mounted components are imported components. In terms of price, using imported components will certainly be more expensive because imported goods must be subject to import taxes or import duties. While in terms of time, the process of ordering imported components takes time so that ship production time becomes longer

The SMEs of ship component has a strategic position to supply the needs of ship components in Indonesia in order to reduce dependence on imported products. While the development of SMEs of ship component as a major supporter of the shipping industry in Indonesia has low competitiveness, indicated by low product quality, less competitive prices, and lack of access to information (Khoryanton et al., 2016). So to achieve the competitive advantage SMEs of ship component capable of producing quality products and reliable, necessary effort to improve the performance of the value chain.

The quality of the ship component product can not be determined from a single production process, but a series of process flow starting from the raw material aspect, the production process and the marketing as a whole (Abdulmalek, 2007). This means that to produce a sustainable standard-quality ship component product requires good performance from its value chain. Based on this, several problems in this research are: Condition and description of the value chain pattern of SMEs of ship component, value-added product development conditions in the SMEs of the ship component value chain, potential development of the SMEs of ship component value chain, and design improving the competitiveness of SMEs of ship component based improved value chain performance.

Improving the performance of the value chain has the potential to increase productivity in terms of value and profitability on an ongoing basis for all value chain actors in ship component production activities. The value of chain collaboration then becomes very important for small and medium industries in developing countries to ensure access to new and more profitable markets (Trienekens et al., 2011).

2. Literature Review

The product value chain is an activity that starts with raw materials to after-sales handling and includes interrelated activities with the supplier and consumer linkage (Gereffi, 2005). Appropriate relationships can lead to increased productivity and efficiency and provide access to new markets describe an effective value chain as a key competitive advantage that can generate value added for an industry (Kaplinsky and Morris, 2001). Therefore, the value chain approach helps understand how to reshape an efficient value chain, identify which actors benefit from a range of activities from upstream to downstream,

improves the ability of local SMEs to compete, improves acceptable results for consumers, encourages policy related to the increase of added value and prosperity of small and medium enterprises (Bayraktar, 2009).

In addition to business players, in each value chain, there are also other important institutions that function to provide support to business actors (value chain support institutions) but not directly involved in the production or trade of related products (De Waal et al, 2014).

Value chain analysis will provide a fundamental and comprehensive understanding of the value chain of a product (Kaplinsky, 2004), which includes: Value Chain Mapping; Identify the functions, operators, and value chain support institutions and relationships that exist among value chain actors; Quantifying the Value Chain; a value chain map with quantitative information on, for example, the number of offenders along the value chain, raw materials, turnover in each value chain function and value chain economic analysis. Assessing the distribution of income and value-added along the value chain, as well as productivity and competitiveness.

3. Materials and Method

The discussion on strategy design to improve the competitiveness of SMEs of ship component based on value chain development is a case study in Indonesia, with research subjects in 30 units of SMEs of ship component concentrated in Tegal Regency, Central Java. The ship component product produced during the research survey was a square window, Side scuttle, and weathertight door. There are two marketing channels for non-certified products (Marketing channel I) and marketing channels for certified products (Marketing channel II). Data retrieval refers to a series of activities to present a ship component from the provision of raw materials and added materials, production processes at SMEs of ship components, traders and ship owners, as well as direct support institutions and indirect support institutions (enablers) in these various stages.

Research method using value chain analysis done through four stages, namely:

- Value Chain Mapping, Identifying functions, operators, and value chain support institutions and relationships among value chain actors;
- Economic analysis of the Value Chain, assessing the distribution of income and value-added along the value chain, as well as productivity and competitiveness;
- Analysis of potential value chain development, including the potential for raw material development, the development potential of the production process and current market potential;
- Formulate objectives of value chain development and design a Value Chain Components Development Strategy.

4. Results And Discussion

4.1. Ship Component Value Chain

This study uses a value chain approach analysis. Conceptually, a value chain can be defined as a set of economic activities (value chain function) which are needed to deliver a product from its production to the market. Generally, the stages are from providing the raw material (input) of the specified product, primary production, process, distribution and the last one is the final stage (Kaplinsky, 2000). Besides the practitioners, there are important agents in each value chain which support the actors (value chain supporting agencies). However, they are not directly involved in the production or related product marketing (Bolwig et al., 2010). Value chain diagram is shown in figure 1.

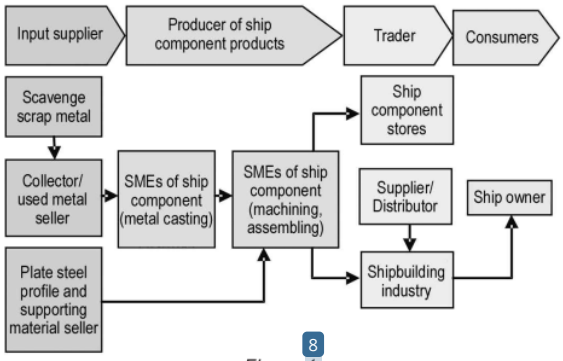

Figure 1. Activities of the actor in the ship component value chain

Input supplier

Hull construction is a group of ship components that are widely produced by SMEs of ship components, such as anchors, anchor chains, weathertight door, watertight door, non-water tight door, and windows. This component group is dominated by plate material and steel profile. SMEs of Ship component buy plate material, steel profiles and other supporting materials such as tempered glass, rubber seals from a material seller in big cities like Jakarta, Semarang, and Surabaya.

While for side scuttle raw materials recommended by the certification body is aluminum type AlSi12 (b) because it has good casting characteristics. This kind of material is widely produced using all types of casting. It is also resistant to corrosion by forming a layer of SiO2.xHO on its surface (Ma et al., 2010). but SMEs of ship components still use scrap material materials such as pistons, engine blocks, alloy wheels, pans, and aluminum plates for reasons of high prices and difficult to get the material. scrap aluminum material is obtained from metal scrap sellers in the area around the SME Components of the ship. The lack of knowledge about metal casting techniques for the ship's industry players greatly affects the quality of the products produced.

The Producers of Ship Component Products

Production process capability from casting, machining, assembling, to packaging by using conventional production equipment. The ability of human resources and collective cooperation between producers that are still low and the absence of applied production standards cause the quality of output products are not similar and do not meet the quality standards. One of the Government's efforts to assist the standardization of SME products is through the Small and Medium Industry Development Project to improve service provision or abbreviated SMIDep (Small Medium Industry Development Platform) facilitated by the Ministry of Industry in collaboration with JICA to assist in the improvement, innovation, transfer of technology; improve production system and quality control; and develop the design and engineering of products required to meet quality standards. Strategies have been undertaken to address the weaknesses of ship component SMEs through 3S technical assistance (sort, set in order, and shine) and improve human resource knowledge and skills in terms of technical drawing.

Traders

SMEs of ship components supply its products to ship component stores in major cities, such as Semarang, Surabaya, Cirebon, and Jakarta. The ship component store sells ship component products to suppliers designated by the shipyard as required by shipbuilding. There are several SMEs of ship component that can sell to shipyards because they have the required product certificates. The absence of a partnership pattern that serves to help market access and business network development makes SMEs ship components difficult to achieve

the expected quality standards. The strategy that has been done for market development and capitalization is to establish a cooperative as an SME venture component of ship components in market development. However, in its development, the cooperative is not running optimally.

Infrastructure and Supporting Institutions

As an industrial city, Tegal District has adequate infrastructure, such as an accredited laboratory for testing Ferro and non-Ferro materials, CNC machine laboratories, and design laboratories. but the ship component SMEs have not utilized the infrastructure optimally.

The Industry and Commerce Department becomes the main stakeholder which has an important role as supporter and facilitator to develop SMEs of ship component to cooperate with many related stakeholders. Supporters functions in this value chain are as follows: financial capital aid, technology facilitator, and developer, human resources improvement as the actors in the industry, capability improvement of the industry actor, marketing access aid, Infrastructure, mediation/assistance. There are many institutions involved in the handling of SMEs of ship component in Tegal. However, there is no good coordination between them in terms of the planning, producing, evaluating and reporting the research findings. They still do the process independently.

4.2. The Recent Condition of Additional Value development of ship component

The margin in the value chain

In order to get the description about margin in the value chain at SMEs of ship component, there are two big groups of marketing channels that should be identified. Each of them has a different profit margin. SMEs of ship component which produces uncertified ship component with production and marketing cost displayed in Table 1. Their products are distributed through the ship component stores, distributor/supplier, and shipbuilding industry. SMEs of ship component who produce the certified products with the marketing and production cost displayed in Table 2.

Figure 2 presents the profit and marketing margin of each product group. Profit Margin is an indicator of a company's ability to produce net income. The income can be compared from its sale and net income. Profit margin counting is important because it determines a company's next step, especially in implementing the marketing strategy through price establishment (Erdis et al., 2011).

Marketing margin is the difference between the price paid by the consumer for specific product and price received by the producer. The quantity of marketing margin may rise because the infrastructure marketing and profit marketing service among

Name of ship components	SMEs of ship component		Ship Component Store	Distributor/ Supplier	Shipbuilding Industry
	Raw materials and production cost (USD/Unit)	Marketing cost: (USD/Unit)	Marketing cost: (USD/Unit)	Marketing cost: (USD/Unit)	Marketing cost: (USD/Unit)
Square window	22.49	3.75	4.12	4.12	4.12
Side scuttle	23.99	5.25	5.62	5.62	5.62
Weathertight door	363.54	12.74	14.24	14.24	14.24

Table 1. Marketing and production cost of ship components is not certified
Source Author's estimation from survey data. Exchange rate in 2017 was US$1.00 = IDR 13398,1

Name of ship components	SMEs of ship component			Shipbuilding Industry
	Raw materials and production cost (USD/Unit)	Certification cost (USD/Unit)	Marketing cost (USD/Unit)	Marketing cost: (USD/Unit)
Square window	22,49	7,50	3,75	4,12
Side scuttle	23,99	8,99	5,25	5,62
Weathertightdoor	363,54	20,24	12,74	14,24

Table 2. Marketing and production cost of certified ship component
Source Author's estimation from survey data. Exchange rate in 2017 was US$1.00 = IDR 13398,1

		Marketing Line I				Marketing Line II	
		SMEs of ship component (1) → Ship component store (2) → Distributor or supplier (3) → Shipbuilding Industry (4)				SMEs of ship component (1) → Shipbuilding Industry (2)	
	Name of ship components	(1)	(2)	(3)	(4)	(1)	(2)
Sale price (USD/unit)	Square window	30.99	42.73	52.47	59.97	52.47	59.97
	Side scuttle	33.24	44.48	54.97	65.46	54.97	65.46
	Weather tightdoor	420.59	469.79	524.7	599.66	524.7	599.66
Profit Margin (USD/unit) (%)	Square window	4.75 (18.10)	5.62 (16.01)	9.87 (21.07)	3.38 (5.97)	18.73 (55.51)	3.38 (5.97)
	Side scuttle	4.00 (13.68)	5.62 (14.46)	4.87 (9.72)	4.87 (8.03)	16.74 (43.79)	4.87 (8.04)
	Weather tightdoor	44.31 (11.78)	34.96 (8.04)	40.67 (8.40)	60.79 (11.28)	128.18 (32.33)	60.72 (11.27)
Marketing Margin (USD/unit) (%)	Square window				28.98 (93.51)		7.50 (14.29)
	Side scuttle				32.22 (96.93)		10.49 (19.08)
	Weather tightdoor				179.07 (42.58)		74.96 (14.29)

Figure 2. Marketing and Profit Margin in Line Group

the mediators and the managers are inefficient and irrational (Hasan et al.,2016).

Marketing margin in every line is taken by decreasing the sale price at the end seller level with the sale price at SMEs of ship component level. Marketing line I have a bigger marketing margin than marketing line II. The marketing margin in marketing line I for square window product, side scuttle, and weather tight door are US$ 28,98/unit, US$ 32,22/unit, US$ 179,07 /unit, while the marketing margin in line II for square window product, side scuttle, and weather tight door is US$ 7,50/unit, US$ 10,49/unit, US$ 74,96/unit, with the highest margin in line I is 96,93%. This result is caused by (1) the difference of the engaged marketing agents, (2) the difference between the sale price received by SMEs of ship component in each line, (3) the difference of the sale price at the final level.

From the analysis, it is known that the more the engaged marketing agents the longer the marketing chain and the bigger the marketing cost. Some of the price received by the ship component industry are generally affected by the marketing line. The longer the line the bigger the cost and income received by the marketing agents and the margin increases. The bigger the marketing margin the smaller the price received by the ship component industry.

Connectivity among areas

Ship component production activities conducted in the Village Kebasan, Talang Subdistrict, Tegal district. Broader area connectivity can be done during the process of providing raw materials and marketing the product. The main raw material of plate and steel profile is obtained from a supplier of plates and steel profiles in big cities like Jakarta and Surabaya. Casting raw material is scrap aluminum obtained from an aluminum scrap seller in the area around the site. The product is then sold to equipment or shipping stores in Tegal, Semarang, Surabaya, Cirebon, and Jakarta. There are several companies that deliver their products through suppliers to shipyards in Tegal, Surabaya, Cirebon, and Jakarta. Some companies that have some of their products certified even supply to shipyards in some areas of Indonesia.

The Inter-Sector Connectivity (vertical and Horizontal)

Ship component product has supporting sectors. Some sectors/ industries related to the ship component chain are explained in table 3.

The main activity in Value Chain	Activity	Sector/ industry related
Raw material need	Scrap raw material supply	Scrap metal commerce
	Standard raw material supply	Standard metal commerce
	Others supporting material supply	Rubber, glass, casting send commerce
Casting	Half-done material	The small and medium industry of engineering, fuel industry, supporting material commerce
Engineering and assembling process	Ship component production	Production machine and supporting machine commerce, laboratory unit, certification institutions, capital loan agent (bank)
Storage and wrapping	Storage and wrapping	Building material, wrapping material (cardboard and sack, etc)
Product delivery	Product delivery	Transportation, delivery service

Table 3. The inter-sector connectivity in ship component

Policy Intervention toward Value Chain

Ship component industry cluster in Tegal District is potential and government makes that cluster as the main industry based the Industrial Ministry regulation No: 135/M-IND/PER/12/2011 by focusing on standardized ship component production as this cluster industry is believed to be more competent than that of other metal casting industries. Through a set of programs, district government (both Tegal and Central Java governments) have developed this ship component industry. Among them is human resources competence development for metal industries in Tegal conducted by Industrial and Commercial Department of Central Java Province, Japan International Cooperation Agency (JICA), and industrial ministry by establishing a small and medium of ship component development project through service delivery platform.

4.3. Value Chain Development Opportunity

Raw material availability

Although the plate mill and steel profile in Indonesia have been many, in fact, the raw materials used are still imported. With the availability of natural resources of iron sand which is quite abundant in Indonesia around 5110 million tons (Kemenperin, 2017), of course, the opportunity to maximize the potential of local raw materials is still very open.

While for side scuttle is done by casting process from the aluminum raw material. The total national bauxite resources amounted to 551,961,397 tons with 179,503,546 tons of bauxite reserves spread over the east coast of Sumatra, West Kalimantan, South Sulawesi, Central Maluku and Papua (ESDM, 2016). SMEs of ship component still use material from aluminum scrap to lower their production costs. There are two types of aluminum waste that is used as a raw material that is scrap velg and engine block. the potential amount of aluminum scrap about 0.5 tons per month is obtained from scrap aluminum sellers, they supply aluminum scrap as one of the materials for casting. Other supporting materials such as glass and rubber that have a standard quality are not available in Tegal. They must find it in big cities like Jakarta and Surabaya.

The Potentiality of Production Process

The quality of ship component existing product can be improved to be a standard product which is certified and valuable. Recently, the majority SMEs of ship component products have low quality. The profit obtained by SMEs of ship component for their unstandardized product is square window US$ 4.75/unit, Side scuttle: US$ 4,00/unit and Weathertight door: IDR 44,31/unit. The standardized products make a profit around Square window US$ 18,73/unit, Side scuttle: US$ 16,74/unit and Weathertight door: US$ 128,18/unit.

The potentiality of recent market

Sea toll program in Indonesia pushes the need for a new boat. Boats needed in 2015-2019 are 83 crates ships in various sizes 00 units of public transportation ship; 26 units of pioneer ship; 73 units of beach guard ship, 60 units of cargo ships, 15 units of semi crates ship; 20 units of rede ships; 5 units of livestock ships; 20 units of navigation ship; 1 unit of FLNG, 4 units of FPU, 3 units of FPSO, and 1 unit of FSO; more or less 3280 units of fish transport essel, 9 units of fishing ship, and 1 unit of fish research ship; 30 units of patrol ship Bakamla (sea security agency RI); 13 units of patrol ship. Ships are also needed for river and lake sailing, crossing, security such as warship, submarine, and etc. (Iskendar, 2016). Activity in sea tourism also needs ships. This condition shows that the ship components are needed much. It opens the opportunity to develop the industry of ship components. The profit which is obtained from the production process of the ship component recently is still not optimum because of the low quality of the product, limited diversification of the product, non-maximal exporting competitiveness. Therefore, this problem should be noticed in the future.

4.4. The strategy of value chain development

The value chain development target

From the recent analytical additional income development in the margin of value chain, inter-sector connectivity, inter-area connectivity, policy intervention toward value chain, and value chain development opportunity, the value chain development target to the ship component product in Tegal District can be formulated as follow: "Additional Income Development that Can be Achieved by SMEs of ship component through the Improvement of Ship Component Product Quality Standard". This formula can be reached by providing solutions for any problems faced by doers alongside the value chain. The detail problems and identification of ship component product value chain development can be explained in table 4.

Problems	Probable solution identification
Technology/Product development: Limited access for SMEs of the ship component to get appropriate technology causes inefficiency of the production process and it results in the low quality of ship component products.	Creating access for SMEs of ship component to appropriate technology through groups/organizations/associations to cooperate with universities/Polytechnic
Market access: SMEs of ship component does not have any access to market information and price at consumer level causes dependency to seller or supplier who may decide the product price.	Providing information about the recent market and potential products of ship components and introducing groups enterprises /association with a potential consumer.
Management of effort and organization: The absence of institution which can protect the organization (associations) weakens the bargaining chance of SMEs of the ship component. No access to information source and capital.	Making association for SMEs of ship component and strengthening cooperation in the level of group enterprises/SMEs.
Government Policy: There is no grand design and master plan of product development of ship component at the district level. Thus, supports and programs from other institutions are still partial and unfocused.	The arrangement of a master plan/grand design of ship components in Tegal
Finance/Capital: Low access to the SMEs of ship component employers to capital source information which may support them causes their dependency to moneylenders	Creating web among the SMEs entrepreneurs and associations with banks through gathering and delivering of effective cost schemes.
Input supply: Relatively high price of raw material and supporting material supply which is still obtained from other city spends additional expense.	Collectively buying the materials through cooperation at the level of SMEs of ship component entrepreneurs.
Infrastructure: Production road which mostly has not been accessed spends additional expense for transportation.	Gradual constructing production road at the sub-district ship components producers.

Table 4. Problems and probable solution identification

Strategies to develop a value chain of ship component

In order to achieve the target which has been formulated before, strategies to develop value chain which guides to create intervention and facilitation from many stakeholders are needed. They should be measured and managed. By referring to the matrix of generic strategies and looking at the market prospect and the existing product condition, development of ship component value chain in Tegal recommends strategies of product development and diversification as shown in table 5.

	Existing product	New product
Existing market	Market penetration strategy	Product development strategy: Qualified ship component product based on certification institutions standard The domestic market in dockyard industry
Newmarket	Market development strategy	Diversification strategy: Ship component product variation addition Export and domestic industry market of the dockyard

Table 5. Strategy Focus

Product development strategy is determined to improve the quality of an existing product. Therefore, a ship component can meet the expected quality based on certification institutions standard and other international certification standards. The examples are non-water tight door (SNI 7361, 2007), Weather-tight door for small boat (SNI 7362, 2007), shipbuilding and sea construction ship side window (SNI ISO 1751, 2007), Weather-tight one-sided steel door (SNI ISO 6042, 2007), ships Side Scuttles (ISO 1751,1993), shipbuilding and marine structures ships, heated glass panels for ship rectangular window (ISO 3434, 1992), shipbuilding and marine structures ship' ordinary rectangular windows (ISO 3903,1993).

These standardized ship components have a higher price than the existing products. The implementation of this strategy needs some effort such as improving casting technique to produce standard material; improving production process of ship component; improving capacity of SMEs of ship component in managing the business; market information of ship component products; promotion of ship component products; strengthening SMEs of ship component organization to increase bargaining power with buyers; policy support from district government (province and district) to improve commerce management of ship component product; improving infrastructure to support production process; supporting capital for SMEs of ship component through affordable and easy cost scheme from both financial institution or bank and non-bank.

Diversification strategy is determined to catch market opportunity of products from adding the variation of ship components kinds which are still widely opened. The implementation of this strategy needs some effort such as providing information of new ship component products with its market (market source and demand); developing access and web for new products; providing right technology to create new product; developing human resources capacity in applying right technology to produce new ship component product; arranging appropriate business and business plan to develop new ship component product.

5. Conclusions and Recommendations

The design to improve the competitiveness SMEs of ship component in the global market needs a strategy to develop the value chain to provide direction for the creation of interventions and facilitation from various stakeholders in a targeted and measurable way. The direction of value chain development is recommended for product development strategies and diversification strategies:

- Product Development Strategy is established to develop existing products through quality improvement and product certification.
- Diversification Strategies, adding new product variations to capture market opportunities that are still wide open.

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Quality of Human Resources and Personnel Security Risk Management in Digital Economy

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Abstract

The article discusses the main trends and prospects for the digital economy development and their impact on the quality of human resources. New threats and challenges to personnel economic security in the conditions of digital transformation associated with robot automation and technological progress are being revealed. The main indicators of the digital economy development in Russia and several other countries of the world are being analyzed. The problems of digitalization of companies in the conditions of the rapid development of information and computer technologies are being investigated. The article deals with issues and problems of personnel risk management in the quality management system of a digital company. Personnel risks specific to a digital company are systematized by level of occurrence, by source of occurrence, by losses and by context of losses from the impact of personnel risks. It is proved that human capital acts as a driver of economic growth and development of the digital economy. The target model of universal competencies, including digital, cognitive, social and behavioral skills necessary to accelerate digital transformation, increase competitiveness and personnel security of the national economy, is being substantiated.

Keywords: *digital economy; quality of human resources; personnel security; threats and challenges to economic security; personnel risks; the target model of universal competencies.*

1. Introduction

In the modern world, the digital economy is developing rapidly, which is a global development strategy for countries and regions. Digital transformation changes the social-economic paradigm of life. This is a new basis for the development of public administration systems, the economy, business, the social sphere, the whole society. The G20 Leaders Declaration (July 2017) emphasized that digital transformation is the driving force of global, innovative and sustainable growth, contributing to reduction of inequality and achievement of sustainable development by 2030.

Diffusion of innovations, rapid development of nanotechnology, time compression can lead the world to a new technological revolution, accelerated emergence of the seventh technological structure based on artificial intelligence, and completely change not only the economy and environment, but also the nature of man himself.

In this regard, the problem of new requirements for the quality of human resources and personnel security at the level of the national economy deserves attention. Personnel security in work is understood to be a state of protection from negative effects on economic security by reducing the risks and threats associated with human resources, their intellectual potential and labour relations in general.

The purpose of this article is to study the effect of digitalization on the quality of human resources and the identification of personnel security risks.

The main objectives of the study are: to consider the main trends and prospects for the development of the digital economy; to identify new threats and challenges to global economic security in the context of digital transformation; to analyze the main indicators of the development of the digital economy; to study the personnel risk management system in the quality management system of a digital company; to justify the target model of competencies necessary to accelerate the digital transformation of the national economy and ensure personnel security.

2. Materials and Methods (Model)

Direction of the development in information technology and digital economy is closely connected with education and human resource development. This study is based on the UNDP methodology using the human development index. To assess the quality of human resources in the labour market, the methodology of the Danish scientist J. Rasmussen is being applied. According to the chosen methodology, the total number of people employed in the economy is divided into three groups: “Knowledge” (high qualification, cognitive challenges), “Rule” (medium level of qualification, cognitive routine tasks), and “Skills” (basic level of education, mechanical tasks). A critical indicator for countries with developed digital economies is the share of employees in the “Knowledge” category, which is more than 25%.

The main methods of identifying personnel risks are analysis and synthesis and comparison. The methodology for calculating the level of digitalization of companies is carried out on the basis of calculating the coefficient of Biesot (PB) = CPE / CPA, where CPE is the level of digitalization of the company and CPA is the rate of outrage or threat (the level of digitalization of society). CPE is calculated annually by ABBYY (31% by 2019). CPA is measured by calculating the average of three sub-indices: the

sub-index of access to information and communication technologies (hereinafter referred to as ICT); ICT usage intensity is measured by ICT usage sub-index; The ICT impact sub-index shows the social and economic effects achieved as a result of the use of ICT by the population (64% by 2019)

It is worth noting that the sources of information were the works of Russian and foreign empirical studies, reports of official statistics services. The method of the author's research on the identification of personnel risks of digital companies is presented in Table 1.

The main objective of the research	Methods of research	Sources of information
Identification and systematization of personnel risks of a digital company	Analysis, synthesis, comparison, retrospective analysis	The data of the official state statistics service Reports of international and Russian studies

Table 1. Elements of the methodology for identifying personnel risks of digital companies

3. Results and Discussion

A. Many leading countries of the world are developing digital strategies of the state [1]. In July 2017, the Digital Economy of the Russian Federation program was adopted in Russia, the essence of which is the transition to a new technological level of social and economic development in order to ensure national sovereignty, increase the country's competitiveness, well-being and quality of life of people of Russia.

According to the World Bank, the share of the digital economy in total world GDP is 5.5%. Analysts predict a substantial increase, by 2035 its volume will exceed $ 16 trillion [2]. Russia still ranks 39th in the world ranking of countries (see table 2). The contribution of the digital economy in the gross domestic product of the Russian Federation is 2.8%, and most of this (84%) is in the field of consumption (e-commerce, online search, offline purchases). However, from 2011 to 2015, the digital economy was growing 8.5 times faster than the Russian economy as a whole, and provided a quarter of the country's GDP growth [3].

Ranking position	Country	Average value of the index BCG-Intensity
1	Denmark	213
2	Luxembourg	212
3	Sweden	208
4	South Korea	205
5	Netherlands	198
6	Norway	191
7	United Kingdom	191
35	China	120
39	**Russia**	**113**
43	Brazil	97

Note: Based on materials of BCG Review. November 2017; RBK. No. 2. June 2017

Table 2. Ranking of the world countries by the level of the digital economy development, 2016

Transition to the digital economy is accompanied by a few global trends:

- geo-economic (low rates of economic growth, growth of social inequality, acceleration of regionalization);
- demographic (growth of world population, increase in the share of older people, the “digital” generation entry into the labour market);
- technological (robot automation, digitalization of business processes).

Innovation, digital lifestyle, introduction of new information programs and technologies, change of the technological era — these are the processes which are developing exponentially. We should be ready for radical changes in the future already in the present.

The fourth industrial revolution forms a world in which virtual and physical systems interact with each other, spreading to a variety of areas: renewable energy resources, decoding information contained in human genes, nanotechnology, quantum computing. Digital technologies are becoming increasingly integrated, leading to the transformation of society and the global economy. The second and third technological revolutions are still spreading in a number of countries. Thus, 17% of the world's territories (1.3 billion people) still do not have access to electricity – the result of the second industrial revolution, and half of the world's population (4 billion people) do not have access to the Internet, which marked the third industrial revolution [4] .

Creating benefits for consumers, the fourth industrial revolution creates problems in the world of labour production, exacerbating inequality. In developed and rapidly developing countries like China, the share of labour in GDP has decreased due to a decrease in the relative price of the means of production. Society is facing the need to sign a new social contract, creating a system of common values that will turn the fourth industrial revolution into a condition for the growth of opportunities and well-being for all members of society. The need to regulate employment in the new conditions is becoming more urgent, because as it was noted in the first third of the twentieth century by J. Keynes, the emergence of technological unemployment, due to the fact that the discovery of ways of economical use of labour, will turn into a mass phenomenon.

There exist great difficulties in the global labour market: the problem of employment, growth of mass unemployment worry most of both developed and developing countries. According to the International Labour Organization (ILO), in 1999 there were about 120 million officially registered unemployed in the world, of which 34 million lived in developed countries. At present, according to unofficial data, the number of unemployed is estimated by experts at 820 million, which is almost a third of the total working-age population of the planet. In the early 1990s, the highest unemployment rates were recorded in industrialized countries: South Africa (48.0%), Spain (22.4%), Finland (17.7%), Ireland (17.6%) [5]. The situation on the global labour market is also complicated by the fact that among people who have a job, there is growing uncertainty about the stability of their jobs and incomes, as mergers and intense competition force companies to modernize enterprises. Hiring and firing employees, depending on the needs of the market, fully satisfies companies engaged in increasing profits, but creates significant barriers to the realization of universal human right – the right to work. This problem has significantly worsened during the crisis of 2008-2009 and the subsequent recession. Young people especially have difficulties in the labour market (see table 3).

Indicators	2009	2010	2011	2012	2018	Youth unemployment
Russia	**8.4**	**7.5**	**6.6**	**5.7**	**5.2**	**16.35**
Germany	7.8	7.1	6.0	5.5	3.7	6.77
Italy	7.8	8.4	8.4	10.7	11.2	34.73
Spain	-	-	25.0	27.4	17.2	38.75
Canada	8.3	8.0	7.5	7.2	6.3	11.61
United Kingdom	7.6	7.8	8.0	7.9	4.3	12.08
USA	9.3	9.6	9.0	8.1	4.4	9.18
France	9.5	9.7	9.6	10.3	9.4	22.14
Japan	5.1	5.1	4.6	4.4	2.8	4.62

Table 3.
Unemployment rate (% to economically active population)
Sources:
1) Rosstat: www.gks.ru;
2) https://www.economicdata.ru/country.php

The gap between the haves and have-nots, the knowledgeable and the ignorant, those who have access to the information highway and those who do not, is growing. There are mass social contradictions between new highly paid workers

and laid-off workers, whose knowledge in the digital economy has become uncalled. Deep contradictions within the organization are brewing: workers are urged to work hard for the good of the company, but they do not participate in the division of material benefits that they themselves create. The problem is exacerbated by mass migration between countries and continents. According to the calculations of the World Bank, an increase in number of migrants by only 0.5% lowers the wages of the native population by 1%, that is, twice. All this creates conflicts and threats to personnel and economic security.

In the foreseeable future, the demand for professions increases, allowing decisions to be made in the face of uncertainty and the development of new ideas. About half of the existing 702 professions can be automated in the next twenty years [6]. With rapidly changing working conditions, it is important to acquire personnel with the ability to anticipate new trends in employment, to provide employees with knowledge and skills that enable them to adapt quickly.

B. Digitization of the economy has many economic and social benefits. To stimulate the acceleration of the digital economy, economic growth is needed in the country. The new quality of growth is determined by the aggregate capital of the nation: natural, economic, human and social, which are interconnected. In the modern world, special emphasis is made on human capital as a factor of economic growth and progressive development. Introduction of new information programs and technologies, the problem of big data analysis (BigData), transition to technological structure, emergence of Blockchain technologies, the Internet of Things (IoT), makes us think differently about human resources and knowledge.

According to the UNDP, in 2017, Russia with an indicator of 0.816 was included in the group of countries with a high human development index, which is significantly higher than the world average value – 0.728 [7]. However, taking into account in-country inequality, the indicators decrease to 0.738 (see table 4).

No. (2017)	Country	1990	2000	2010	2014	2016	2017	2017*
1	Norway	0.850	0.917	0.942	0.946	0.951	0.953	0.876
5	Germany	0.801	0.868	0.921	0.930	0.934	0.936	0.861
13	USA	0.860	0.885	0.914	0.918	0.922	0.924	0.797
19	Japan	0.816	0.855	0.885	0.903	0.907	0.909	0.876
49	**Russia**	**0.734**	**0.720**	**0.780**	**0.807**	**0.815**	**0.816**	**0.738**
79	Brazil	0.611	0.684	0.727	0.752	0.758	0.759	0.578
86	China	0.502	0.594	0.706	0.738	0.748	0.752	0.643
130	India	0.427	0.493	0.581	0.618	0.636	0.640	0.468

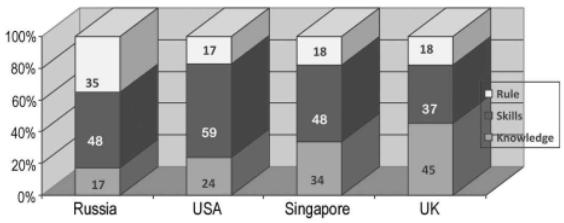
**Note*: Taking into account the intra-country inequality

Table 4. Dynamics of the Human Development Index

Direction of information technology development is inextricably linked with education and development of human resources. According to the methodology by J. Rasmussen, the total number of people employed in economics is divided into three groups: "Knowledge" (high qualification, cognitive challenges), "Rule" (medium skill level, cognitive routine tasks), "Skills" (basic education level, mechanical tasks). A critical indicator for countries with developed digital economies is the share of employees in the category "Knowledge", which is more than 25% (USA, Japan, Germany, Singapore, UK).

A study conducted by the BCG-group (October 2017) [8] shows that in Russia only 17% of specialists (scientists, IT-engineers, doctors, teachers, managers) belong to the first group and have highly developed competencies. The main share of 48% of employees (accountants, lawyers, office administrators) is in the second group, and 35% are low-skilled labour (salespeople, security guards, cleaners, drivers, etc.), which at this stage of development does not allow entering group of countries with developed digital economies (Fig.1).

Researchers at BCG groups suppose that it is problematic to form employees of the Knowledge category in the Russian



(White box – "Rule", Dark grey box – "Skills", Light gray box – "Knowledge")

Figure 1.
Country Development Pathway towards a Digital Economy

reality due to the lack of a critical mass of demand for knowledge from companies, and the fact that the education system does not prepare talents for the knowledge economy, and Russian society prefers stability to growth. This leads to the emergence of personnel risks associated with a lack of qualified personnel for development digital economy.

C. Development of the digital sector of the economy is increasingly drawing into the formation of virtual profit-making systems, and information and communication technologies are becoming more and more widespread.

By the beginning of 2019, the level of digitalization of companies in Russia remains low (Biesot coefficient (PB) = 0.48, which is less than 1), but the speed of digitalization gradually increases, increasing annually (Figure 2) [9, p. 37-40].

The digitalization process involves all companies, to a greater or lesser degree, taking into account the sectoral specificity, differentiated in the direction of the company's activity and resource endowment. There are general trends in managerial models: first, virtualization of the production and economic activity fields [10, p. 552-553]; secondly, the decentralization of the board as the company's digitalization increases [11, p. 659].

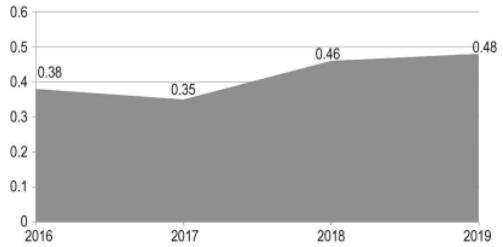


Figure 2. Speed of digitalization of companies in the country (coefficient of Biesot (PB))

The strongest digital changes occur in the field of quality management of goods as the main source for the company's capital creation. The specificity of digital changes in organizational models causes a transformation of the quality management system [12]. The quality management system acquires the character of openness, when consumers can take an active part in creating goods and services for their own needs, thereby becoming participants in the production process. This situation leads to the emergence of a number of risks and threats to the activities of organizations and enterprises.

In the new version of the quality standard ISO 9001: 2015 [13, p.7], the section structure is associated with all company management systems, and a risk management policy has been developed, which is based on corrective and preventive actions, instead of the traditional risk control measures.

Traditionally, the risk management system includes an algorithm of actions for finding, identifying, assessing risks, as well as developing methods to control and prevent risks.

At present, the problems related to personnel risks are of particular relevance in the field of quality management (fig. 3). Traditional algorithms are quite suitable for personnel risk management; however, the existing methodologies within the algorithms do not take into account the specific features of the digital company and cannot be applied to diagnose the level of personnel security in such a company.

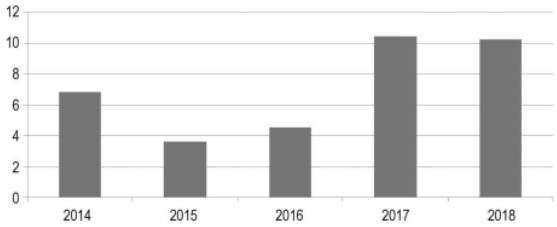


Figure 3. Place of personnel risks in the rating of threats to the economic security of an enterprise [14]

In 2017, in the 13th edition of the global risks report prepared for the World Economic Forum by Marsh & McLennan Companies, the most significant risks of digital development in the world were highlighted, among which personnel risks take a special place. Experts attributed the risk of unemployment and underemployment to the key risks of the digital economy and found that it could cause deep social instability and lead to adverse effects of technological progress [15].

In 2018, Gartner analysts in a quarterly survey of company executives found that the main risk for them was a shortage of personnel with the necessary competencies to work in a digital company. Especially acute shortage of personnel is felt by large industrial companies, financial and manufacturing companies [16].

The lack of personnel with digital competencies may be unprepared for educational institutions, in particular higher education, to develop on the basis of ICT. According to statistics for 2018, the number of computers per 100 students is 22, of which 17 have access to the Internet [17].

In a Gartner analytical report, company executives also point out that the risk of staff shortages exacerbates other risks in the company. They call artificial restraint of the company's digital development and lack of understanding of the concept of digital transformation of their own business the main risks for companies. Under these conditions, risk minimization is possible on the basis of cooperation between the business and the scientific community.

It should be noted that the interest of the scientific community to the problem of ICT development is increasing. The index of publication activity of Russian authors in scientific journals in the field of "Computer Science", indexed in the international system Web of Science in 2018 is 818 units, which is 2% more than in 2011 (364 units) [17]. The indicator of patent applications for inventions in the direction of ICT 792 shows a pronounced growth dynamics compared to 2011, where this indicator was 563 units [17]. Research and development of scientists can be used in the activities of companies to understand the directions of digital transformation and develop a business development strategy.

Scientist A.V. Sundukov in his research systematizes the requirements for leadership skills in organizations of the information sector of the economy. He identifies the following skill groups: individually-personal (high organizational adaptability, mobilization of work in the conditions of technological and informational changes, consideration of new economic opportunities for the formation of market segments associated with IT systems) and organizational-cultural ones, such as the ability to purposefully generate, to transform and direct emotional flows in a team, to create motivational precedents at the interpersonal level, to be able to localize information pressure, develop "information diet" [18, pp. 185-189]. Underdevelopment of digital leadership skills, which is an element of the quality management system of ISO 9001-2015 version, can become a source of personnel risks in the enterprise's activity and adversely affect the final indicators of the company's activities.

L.V. Shmelkova stresses out the main personnel risk of a digital company. It is a misunderstanding of how to use ICT in the real economic activity of organizations, inability to transfer the advantages of virtual reality into the real activity of the company [19, p. 1-4].

Scientist L.A. Chaldayeva in her report "Risks of the digital economy and control technology at the micro and macro level" pays special attention to the risk of declining professional skills. L.A. Chaldayeva writes that at the stage of introducing the digital economy it will be "unprofitable" for one to be a professional in his/her field of activity, since old professions will die off during the active working life and the person will be forced to change an occupation several times. In this situation, indifference is formed to the need to make efforts to learn if it is necessary to relearn and spend time and money each 5-7 years. If the old professions "die off", and the new ones appear once in 7–10 years, then before a new profession appears, it is necessary to train specialists (4 years), and before that teachers who will teach new professions should be trained. However, these intentions should be accelerated and implemented in the system of advanced training, continuous retraining, but it is likely that by the time the teacher's skills have improved, the profession will have begun to extinct [20].

The analysis of the studies which were carried out allows us to systematize personnel risks and to construct a schematic reflection of this systematization (fig. 4).

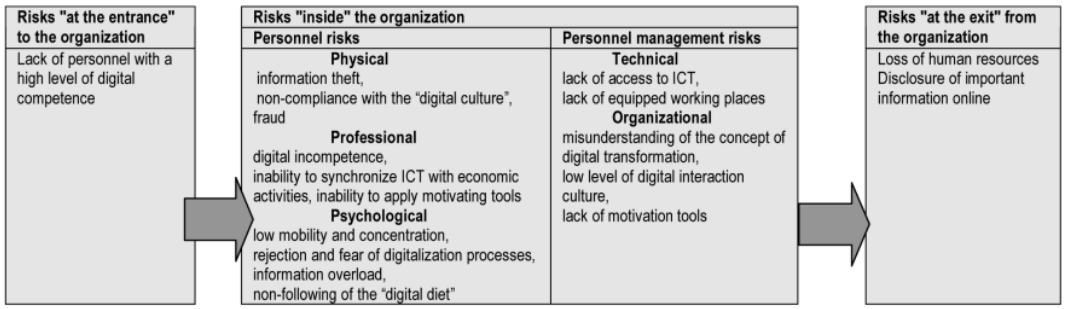


Figure 4. Digital company's personnel risks

The impact of personnel risks causes negative effects on the company's activities, which include:

- Reduction of the company's customer-orientation, which may be caused by a lag in the development of employees' skills from customer requirements or the company's inability to provide a digital improved product or service to the client's needs;
- Psychological rejection and fear of the digitalization

process, and therefore its artificial inhibition may force consumers to leave the company, which will cause financial losses;
- The inability to operate customer relations in a digital environment can lead to serious image losses for the company;
- The lack of a "digital culture" of relationships in a team can lead to fraud (the use of personal data, passwords) or reckless behavior online (posting photos from the workplace) which can weaken the company's economic, scientific, technological and other types of security;
- The impact of personnel risks has negative manifestations not only in the form of financial losses, but also legal ones, and it entails costs in case of legal proceedings on the facts of employee fraud, consumer complaints, and the like.

Directions of further research can be the study of other stages of personnel risk management in the quality management system, namely the assessment of personnel risks. It is necessary to make a risk assessment of the following indicators: the probability of occurrence, the amount of losses, the speed of approach and the duration of action.

D. Transformation of employment forms and the labour market requires the development of new universal competencies in demand in the digital economy. The generation "Z", today's university students, will enter the labour market in 3-5 years and by 2025 will make up about a quarter of the total labour force. With the development of the information society and the digital economy, professions are becoming more complex, the requirements for young professionals are changing: first, digitalization contributes to the release of time to solve more complex and creative tasks; secondly, the requirements for the level of qualification and set of competencies are increasing.

On the basis of expert analysis, the Target Model of Universal Competences 2025 [8] was developed. It focuses on the formation of: 1) digital; 2) cognitive, 3) social behavioural competencies.

Digital skills include the ability to manage information, development of digital culture, knowledge of the basics of programming, ability to use professional digital tools. In the modern world, a practice-oriented approach to learning is being formed from the school days and at the university. It allows you to quickly navigate the virtual environment, find the right information, make electronic transactions, save time and money. The generation "Z" spends more time in the virtual world than in reality. New digital technologies provide new opportunities for analyzing big data, computer vision allows you to automatically process a huge number of images, photos, find the desired object, etc. Digital competencies are necessary for all professionals, both in technical and humanitarian professional fields. For economists, the use of digital technology, quick analysis of big data allows us to prepare a realistic economic forecast, which is based on the most customized consumption model. Professionals in the field of media, communication and design are required to use graphic editors and other digital tools.

Social and behavioural competencies include communication, tolerance, interpersonal skills, cross-cultural interaction. A modern set of student competencies offers knowledge of foreign languages, a broad outlook, mobility. For the generation "Z" values of personal growth, balance of work and personal life are more important than financial opportunities and career.

Cognitive competencies develop with the acquisition of experience: adaptability, solving non-standard tasks, focus on results, self-development, organization, management skills, emotional intelligence, self-development focus, entrepreneurial skills, achievement of results, intercultural interaction. In the information economy based on knowledge, the role of a person as an individual, which is the carrier and creator of new knowledge, is growing.

Qualitative changes in the economy and society are associated with increasing changes in the most profound foundations of social organization — the content of labour. A gradual nonlinear but powerful increase in the role of creative activity leads to changes in both the factors of production (the role of knowledge and culture increases) and its structure (the role of education as the first division in the new economy) and the subject (a creative person replaces the economic man). All these changes create positive and contradictory prerequisites for the future society of mass creative activity, creating a world of culture, and form a digital economy. The emphasis on the creative content of activities as a key element of the digital economy allows us to postulate its innovative nature, based on the creation and implementation of innovations, that is, on creative activity in the field of production, management, education. In the digital economy, consumption time and labour time are combined, especially for people engaged in mental and creative labour. This is due to the fact that digital technologies fill the entire information space of an employee with information processing activities [21]. Free time for all members of society from pure leisure time turns into a period of ever-longer training, continuous education and self-education, and re-qualification throughout the entire life cycle.

4. Conclusions

A. Under the influence of digitalization uncertainty in the labour market is increasing, as it is difficult to determine how many workers in routine occupations have been replaced by robots and how quickly this will happen. The displacement of workers by automated production can be offset by increased employment to meet growing demand. Labour is replaced by innovations in various industries and professions. Employment will grow in high-yield creative work as well as in low-income manual labour, but will decline in middle-income monotonous standard occupations.

B. The study revealed that in order for companies to complete transition to a digital development path successfully, it is necessary to replace the "Skill" and "Rule" employees for the "Knowledge" people. More than 50% of tasks involve analytical work, improvisation, creativity, work in conditions of uncertainty in "Knowledge". Suppose that it is problematic to form employees of the Knowledge category in the Russian reality due to the lack of a critical mass of demand for knowledge from companies, and the fact that the education system does not prepare talents for the knowledge economy, and Russian society prefers stability to growth. This leads to the emergence of personnel risks associated with a lack of qualified personnel.

C. The analysis carried to made it possible to consider the identification block in the personnel risk management system within the quality management system. It was possible to systematize personnel risks: firstly, by the level of occurrence: mega-level (risks of unemployment and part-time employment), macro-level (underdevelopment of competencies of university graduates) and micro-level; secondly, according to the source of occurrence in the company: external personnel risks associated with personnel management and internal personnel risks associated with personnel; thirdly, according to losses and context of losses from the impact of personnel risks.

D. Development of new competencies, formation of professionals in the "Knowledge" category make the foundation for the competitiveness of the country, business and population in the digital economy. Lifelong learning should be an imperative of a modern man. To make transition to the digital economy, the government must facilitate people's transition to a new job and fairly distribute the benefits of this transition. To facilitate the transition to a future labour market, generous unemployment benefits, retraining and employment must be paid. High turnover of personnel of the company should increase the cost of retraining. It is necessary to increase investment in professional training.

Thus, in the digital economy, human capital requirements are changing dramatically. Any effective activity depends on each individual person, on his/her contribution, behaviour, attitude to the task, incentives and motivation, sources of information [10]. The rate of change is so high that it requires young people to form universal competencies of the 21st century, to master new knowledge and skills, so as not to be among the uncalled people and confidently step into the digital future.

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Model of the Evaluation of Population Living Standards Dependence on the Sphere of Services Development

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Abstract

The article discusses the issue of population living standard evaluation, taking into account the results of services sector functioning. Market conditions, economic shifts in the direction of growth in the service sector in national economies actualize the problems of the impact of the service sector on population living standard. Based on the application of the correlation-regression method, the dependence of human development index on GDP per capita and on the share of services production in GDP is established. As an indicator that takes into account the degree of services sector development, it is proposed to use a non-cost indicator - the share of employed (working) people in this segment of the national economy. The proportion of people employed in the service sector, in contrast to the share of services in GDP, is more versatile and informative for international comparisons, and does reflect structural shifts in the economy, determines the country's economic status, which is due to the existing relationship between the development of the service sector, national economy and living standards.

Keywords: *sphere of services; population living standard; methods for living standard evaluation; human development index; share of people employed in the service sector.*

1. Introduction

The study of the problems of population living standard has not ceased to be relevant over the past century, since their solution serves the purpose of substantiating the social and economic policies of the countries all over the world.

The history of the formation and meaning development of the concept “standard of living” as an economic and social category, as a standard of evaluation and as a subjective assessment of the quality of life as a whole leads to similar results. Research of A. Marshall, which determines the standard of living as the level of labor activity in relation to the needs, and considers the main indicator of the standard of living - incomes and wages [Marshall A. [1890] 1920; Marshall A., 1993], laid the foundation for understanding the category of “standard of living” and its active role in human development. He determined the standard of living (Standard of Life) through the level of active life activities and the satisfaction of an increasing number of growing needs (wants). Developing the income approach to the assessment of the standard of living, A. Smith [Smith, 1962] argued that there should be a minimum wage (anticipating the social standard that has been established in many countries), which will ensure an adequate level of employee existence. Further, Riccardo [Ricardo, D., 1817] and Malthus [Malthus T.P., 1993], noted that the standard of living determined by income is influenced by many factors, such as dependence on people's habits and morals, people's habits regarding food, clothing and housing, and others. K. Marx argued that the standard of living “involves not only meeting the needs of the physical life, but also satisfying certain needs generated by the social conditions in which people live and are brought up” [Marx K., Engels F., 1983].

Modern Russian economists also adhere to this position and develop it. N.I. Bazyleva and S.P. Gurko consider the standard of living as the degree of population security regarding material and spiritual benefits based on the existing needs. In this case, the needs have an active character and serve as an incentive for human activity. It is quite normal if their growth causes an increase in the standard of living [Bazyleva N.I., Gurko S.P., 2002].

A similar interpretation is given, for example, and in the work of N. B. Antonova “State Regulation of Economy.” The standard of living reflects the provision of the population with the material and spiritual benefits necessary for their vital activity, the achieved level of their consumption and the degree of people's needs satisfaction for these benefits. It is characterized by various components: health, nutrition, housing, household property, services, education, working and rest conditions, etc. [Antonova N.B., 2002].

Many economists believe that under the standard of living should be considered a complex of conditions for the functioning of a person in the sphere of consumption, manifested in the

scale of people's needs development and the nature of their satisfaction [Mayer V.F., Rimashevskaya N.M., 1988; Bobkov V.N., 2001].

For the standard of living, it is important to have two interrelated aspects: the level of development and the degree of population needs satisfaction. The level of development characterizes the development of needs, which are the initial factor that impels a person to action. The degree of population needs satisfaction is determined by comparing the satisfied and the desired needs. Regulatory needs (for example, the achieved level of human consumption of a food product, the level of consumption of material goods and services by the population, the desired consumption threshold established on the basis of scientific developments, medical recommendations, etc.) can be desirable. This integrated approach to understanding the content of the standard of living was studied in the works of many economists [Zherebin V.M., 2000, 2002; Romanov A.N., 2002; Guriev V.I., 1991; Eliseeva I.I., 2001], emphasizing that the standard of population living should be assessed through the peculiarities of human existence in the sphere of consumption and through the socio-economic indicators of general well-being [Shabunova A.A., Morev M.V., Rossoshansky A.I. , Belekhova G.V., 2015].

Thus, the standard of living is a complex socio-economic category, which can be defined as the degree of population provision with the material, spiritual and social benefits necessary for life. It is also defined as the totality of human activity conditions, including working conditions, life, and leisure.

In the formation of living conditions and living standards, the service sector occupies one of their important places, since in a broad sense, the standard of living includes the full range of socio-economic conditions provided by the functioning and development of the services sector as an economic system. The products of this sphere economic activity are services designed to meet the personal needs of the whole society or its individual members, organizations and households [Gabdrakhmanov O.F., 2016]. According to the World Bank (2016) [World Bank, 2016], the service industry is currently the largest of the modern economy sectors, reaching 69% of GDP in the world as a whole. The service sector exceeds industry and agriculture in 194 countries of the world in terms of its share in GDP, and in 30 of them 80% of GDP is obtained due to the service sector. In Russia, the share of services in GDP, according to statistics, for the first time exceeded the share of goods in 1994. In 2016, the share of the service sector in GDP was 63% against 32% in 1989 [Vasilenko N., 2018].

The standard of living is determined by the actual level of material goods and services consumption, the degree of population needs satisfaction, as well as the development of industries that provide conditions for life in society. It reflects the level and degree of satisfaction of material, spiritual and social needs of the population. Consequently, being an important socio-economic category, the standard of living is a complex of conditions that satisfy the needs of the population. The complex of such conditions is formed due to the development of each type of activity, including the service industry.

2. Methods

In the economic literature, the question of a generalizing evaluation of population living standard and the impact on its changes dynamics in the external environment remains to be controversial.

To evaluate the population standard of living in different countries, a whole system of grouped indicators is used. These include generalized indicators (gross domestic product per capita at parity of purchasing power of currencies, consumer price index, human development index), income indicators of the population and their differentiation, expenditure and consumption, indicators of service industries development, etc.

Among the generalized indicators of living standards, the human development index (HDI) is currently at the center of attention. The human development index (HDI) is an integral indicator that is a standard for a general comparison of the level of different countries and regions (Fig. 1) [Voronina N.A., Zhulina E.G., Kuznetsova I.V., 2012].

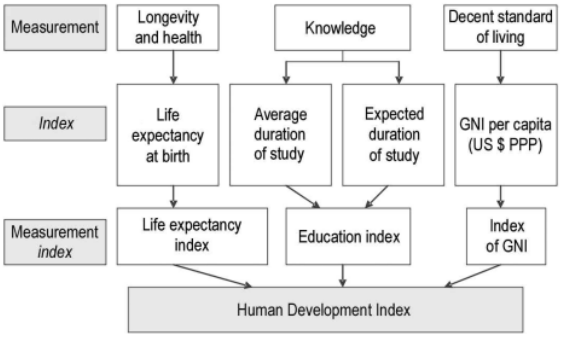

Figure 1. Algorithm for human development index calculating

Human development is the process of expanding the freedom of choice generated by the expanded capabilities and functions of a person [UNDP, 1990; UNDP, 1995]. At all stages of development, some opportunities are essential for realizing a person's potential, since without them many options for choosing a life path would be inaccessible. Such opportunities allow you to have a decent standard of living, gain knowledge and have access to the resources necessary to support it. However, the aspects that are reflected in the human development index almost do not take into account the role of the service sector.

According to the methodology of the UN Statistical Office, the following calculation method is used to determine this index:

$$I = \frac{I_1 + I_2 + I_3}{3}$$

Where:

I_1 is the index of the average life expectancy at birth;

I_2 – the index of the achieved level of education, which includes two sub-indices: the adult literacy index with a weighting factor of 2/3 and the index of the proportion of students (under the age of 24) in primary, secondary and higher educational institutions with a weighting factor of 1/3;

I_3 is the index of GDP per capita in the purchasing power parity of currencies.

Each of these indices is calculated using the same methodology.

$$I_i = \frac{x_i - x_{\min}}{x_{\max} - x_{\min}}$$

Where:

x_i is the value of the indicator for a particular country;

x_{min} and x_{max} are respectively the minimum and maximum values of the analyzed indicators.

Analyzing the components of the HDI, it should be noted that the indicator of the average life expectancy refers to the demographic and depends primarily on the economic potential of the country and its social policy.

Adult literacy rates and the proportion of students (under the age of 24) in primary, secondary and higher education institutions reflect the level of education achieved, not the degree of services sector development.

The index of GDP per capita is the most important characteristic of the level of country's economy development as a whole and the standard of living. Despite the fact that GDP includes the production of goods and services, this indicator does not fully reflect the role of the services sector. Sufficiently high per capita GDP in some countries can be achieved due to

the hypertrophied development of mining and processing activities and a small proportion of service activities. Thus, in the Soviet period, with the dominance of material production, the standard of living remained low.

It is known that the activity on the production of services differs, as a rule, by high labor intensity. At the same time, wages in the service sector and in the conditions of the administrative-command system, and at present remain much lower than in the sphere of material production. At the same time, these differences are not taken into account in the gross domestic product per capita. Consequently, with a non-optimal GDP structure, its volume is also underestimated due to the low wages of workers in this sphere.

For a decent lifestyle, other conditions are important. Thus, raising the standard of living is directly related to the services sector development, but in the human development index this phenomenon is taken into account indirectly.

To confirm this hypothesis, the task was set to investigate, using the correlation-regression method, the dependence of the index of human development level on GDP per capita and on the share of services production in GDP.

3. Results

It is known that according to the human development index, the countries of the world are united in three groups: with high, medium and low levels. It is obvious that the relationship between the human development index and GDP per capita should be close in all groups, since the HDI is calculated on its basis.

It can be assumed that the relationship of the HDI to the share of services in GDP can be strong in the group of countries with a high level of human development. In countries with medium and low levels of development, it is more likely that the closeness of the relationship between the HDI and the share of services in GDP will be weak, since the primary incomes of the services sector (wages, taxes, profits, mixed incomes) are lower than in material production. A weak link between the HDI and the share of the service sector in GDP will serve as proof that the role of the service sector is not sufficiently taken into account when determining the HDI and, therefore, in assessing the population standard of living.

Table 1 presents the dynamics of the value of human development indices, gross domestic product per capita in US dollars in the purchasing power parity of the countries currencies, as well as the country's ranking in terms of the index in 2016.

Countries	Human Development Index						GDP per capita in 2016 (in dollars USA)	Service sector in 2016 (% of GDP)
	1980	1985	1990	1998	2015	2016		
Norway	0.872	0.883	0.895	0.934	0.949	0.944	62249	66.5
Australia	0.858	0.870	0.884	0.929	0.939	0.935	48899	70.3
Switzerland					0.939	0.930	59561	73.7
Denmark	0.867	0.876	0.883	0.911	0.925	0.923	47985	75.2
Netherlands	0.869	0.883	0.897	0.925	0.924	0.922	51049	70.2
Germany	...	...	...	0.911	0.926	0.916	48111	69.3
Ireland	0.818	0.833	0.857	0.907	0.923	0.916	69231	60.7
USA	0.882	0.894	0.909	0.929	0.920	0.915	57436	80.2
Canada	0.880	0.902	0.925	0.935	0.920	0.913	46437	70.2
Singapore	0.756	0.785	0.823	0.881	0.925	0.912	87855	74.0
China	0.792	0.819	0.855	0.872	0.917	0.910	15399	52.2
Great Britain	0.845	0.854	0.874	0.918	0.909	0.907	42481	80.4
Iceland	0.879	0.888	0.906	0.927	0.921	0.899	49136	74.4
Korea	0.722	0.765	0.807	0.854	0.901	0.898	37740	59.1
Belgium	0.858	0.871	0.890	0.925	0.896	0.890	45047	77.5
France	0.860	0.872	0.892	0.917	0.897	0.888	42314	78.9
Austria	0.850	0.863	0.885	0.908	0.893	0.885	48005	70.5
Finland	0.852	0.869	0.892	0.917	0.895	0.883	42165	70.2
Slovenia	...	...	0.840	0.861	0.890	0.880	32085	65.8
Italy	0.843	0.853	0.875	0.903	0.887	0.873	36833	73.9
Czech Republic	...	0.824	0.830	0.843	0.878	0.870	33232	59.7
Greece	0.819	0.839	0.849	0.875	0.866	0.865	26669	80.0
Estonia	0.804	0.812	0.806	0.801	0.865	0.861	29313	68.8
Brunei	0.806	0.811	0.825	0.848	0.865	0.856	76884	42.3
Slovakia	...	0.806	0.812	0.825	0.845	0.844	31339	61.2
Argentina	0.795	0.801	0.804	0.837	0.827	0.836	20047	60.9
Chile	0.736	0.753	0.780	0.826	0.847	0.832	24113	64.3
Portugal	0.756	0.783	0.813	0.864	0.843	0.830	28933	75.7
Hungary	0.787	0.799	0.798	0.817	0.836	0.828	27482	64.7
Bahrain	0.749	0.778	0.797	0.820	0.824	0.824	50704	61.5
Kuwait	...	...	...	0.836	0.800	0.816	71887	40.9
Russia	0.804	0.814	0.812	0.771	0.804	0.798	26490	62.3
Uruguay	0.773	0.777	0.797	0.825	0.795	0.793	21527	68.8
Kazakhstan	...	...	0.784	0.754	0.794	0.788	25145	60.8
Barbados	...	...	...	0.858	0.795	0.785	17100	87.1
Antigua and Barbuda	...	...	...	0.833	0.786	0.783	25157	77.5
Ukraine	...	...	0.793	0.744	0.743	0.747	8305	58.7
Turkmenistan	...	...	...	0.704	0.691	0.688	17485	47.7

Table 1. Indicators for assessing the level of human development in some countries of the world since 1980 to 2016 [UNDP, 2016; Report 2017]

Of course, the level of human development is largely determined by the size of the gross domestic product. However, such a relationship is not strictly determined.

To confirm the hypothesis, indicators for 38 countries of the world were analyzed with a high level of human development (presented in Table 1).

As calculations have shown, the relationship between the HDI and GDP per capita is characterized by an average degree of relations closeness (the pair correlation coefficient was 0.59).

The model of this dependence is expressed by the following equation:

$$\overline{y_x} = 0.787 + 1.899x$$

The parameters of the equation prove that with an increase in per capita GDP, the HDI increases with a slight slowdown. The coefficient of determination (0.355) indicates that the variation of the HDI by 35.5% is due to the change in per capita GDP, 64.5% of the variation is due to the influence of unrecorded factors.

Despite the fact that the share of services in GDP in the group of developed countries is quite high (from 40.9% to 87.1%), the relationship of the HDI to the share of services in GDP was very weak (the correlation coefficient was 0.33). This confirms the hypothesis that in the indicator of GDP per capita the role of the services sector is mediated very weakly. In addition, the relationship between the factors studied (GDP per capita and the share of services in GDP) was even weaker (the correlation coefficient is minus 0.05).

For all the approximation criteria, the equation of the relationship between the HDI and the share of services in GDP is statistically unreliable. The change in the HDI only by 10.7% is explained by the variation of this factor, and 89.3% – by the influence of unaccounted factors.

At the same time, the changes taking place in the sectors and activities of the service sector have a strong impact on other sectors of social production and the country's economy as a whole, and this interaction determines the conditions and population standard of living, its various socio-economic groups.

In this regard, there is an objective need to take into account the degree of development in this area when determining the human development index and setting the rating of countries. From the system of indicators characterizing the scope of services, it is required to choose the most important one to take it into account in the human development index. A more objective evaluation of the degree of service sector development can be obtained on the basis of a non-cost indicator – the share of employed (working) in this sphere.

The international methodology for calculating the human development index is based on a rather limited list of indicators for countries around the world. Information on the number and proportion of people employed in individual sectors of the economy across the world is available, which makes it possible to use the index of the share of people employed in the service sector in determining the HDI and to improve the method of its calculating.

The proportion of people employed in the service sector, in contrast to the share of services in GDP, is more suitable for international comparisons, it is calculated on the basis of the non-cost indicator, really reflects structural shifts in the economy, determines the economic status of a country, which is due to the existing relationship between the development of the service sector and the national economy.

It should be emphasized that the current method of calculating the human development index in order to simplify the use of the simple arithmetic mean formula. Considering that the HDI is determined on the basis of coefficients, it is necessary to make a more correct calculation using the geometric mean, since it is not customary to summarize the coefficients.

Therefore, the proposed formula should have the following form:

$$I = \sqrt[4]{I_1 \cdot I_2 \cdot I_3 \cdot I_4}$$

Where:

I is the human development index;

I_1 – an index of the average duration of the forthcoming life;

I_2 – an index of the achieved level of education;

I_3 is the index of GDP per capita in the purchasing power parity of currencies;

I_4 – the index of the share of employment in the service sector in the total number of employees.

To calculate the index of people proportion employed in the service sector, it is necessary to use the current grouping of employees by type of activity (in accordance with OKVED2). The need for this is also due to the fact that the volume of services is determined for all enterprises for which the provision of services is a primary or secondary activity, that is, in accordance with the All-Russian Classification of Economic Activities.

4. Conclusion or discussion and implication

The population standard of living, being an important socio-economic category, is a complex of conditions formed through the development of various activities. The central place in his assessment is given to the standard integral indicator - the human development index. However, in the modern method of calculating this indicator, all its components practically do not take into account or do not fully take into account the role of the service sector, which negatively affects the final result of the index. For example, if the GDP structure is not optimal, its volume is underestimated due to the low wages of service workers. Although for a decent lifestyle, it is important to consider all the factors.

In order to confirm this hypothesis, the task was to investigate using the correlation-regression method the dependence of the index of human development level on the GDP per capita and on the share of services production of GDP.

It has been suggested that the relationship of the HDI to the share of services in GDP may be strong in the group of countries with a high level of human development. In countries with medium and low levels of development, it is more likely that the closeness of the relationship between the HDI and the share of services in GDP will be weak, since the primary incomes of the services sector (wages, taxes, profits, mixed incomes) are lower than in material production. A weak link between the HDI and the share of the service sector in the GDP will serve as proof that the role of the service sector is not sufficiently taken into account when determining the HDI and, therefore, in assessing the population standard of living.

To confirm the hypothesis, indicators were analyzed for 38 countries of the world with a high level of human development and a corresponding model was constructed.

As shown by calculations, the relationship between the HDI and GDP per capita is characterized by an average degree of the relationship closeness.

For all the approximation criteria, the equation of the relationship between the HDI and the share of services in GDP is statistically unreliable. At the same time, the changes taking place in the sectors and activities of the service sector have a strong impact on other sectors of social production and the country's economy as a whole, and this interaction determines the conditions and population standard of living, its various socio-economic groups.

In this regard, there is an objective need to take into account the degree of this area development when determining the human development index and setting the rating of countries. A more objective evaluation of the degree of service sector development, in our opinion, can be obtained on the basis of a non-cost indicator – the share of employed (working) in this area, which is more suitable for international comparisons and reflects structural shifts in a country's economy, and also determines its economic status, which is due to the existing relationship between the development of the service sector and national economy.

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Corporate Governance and its Impact on the Quality of Internal Audit

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Abstract

In fact the importance of corporate governance has been increased, its principles and its impact on the quality of control and internal auditing after the financial collapses of many international companies and cases of financial misrepresentation of the financial statements in these companies in the last three decades and the developing countries, including Iraq, suffer from the same problems suffered by international companies in addition to the prevalence. This study aims to study the relationship between the principles of corporate governance and the quality of the performance of the control and internal audit function in these companies. The study concluded with several recommendations, the most important of which is that the commitment to apply corporate governance and its principles effectively will improve and enforce the work of the internal control and auditing function, which will be reflected responding to the data published in the financial statements in terms of credibility and objectivity.

Keywords: *governance; internal audit; quality; principles; impact; relationship; credibility.*

1. Introduction

Clearly in light of the economic crisis which has been suffered from most world's countries, the financial meltdown of many international companies. Besides the directing indictment to the executive departments, the departments of control and internal audit as well as to the external audit offices in process of misleading the financial data, falsification and misrepresentation by those parties emerged the need for governance Companies and their principles to strengthen and improve the systems of control and internal audit that will provide financial information resulting from the financial statements of high quality, objectivity and credibility, which reflect the real financial situation of companies. The developing countries, including Iraq, have suffered from the spread of financial and administrative corruption, weakness in the activity and function of supervision and internal audit, the lack of credibility and objectivity of financial statements published by private sector companies and the decline of confidence in those data and financial information by the relevant beneficiaries of such data and financial information.

Our current study aims to highlight the importance of corporate governance and its principles in strengthening and enforcing the work of control and internal auditing in the private sector companies in Iraq that will positively reflect on the quality of the data and financial information disclosed in the financial statements the private sector companies. The first part represents the methodology of the study, the second section deals with the simulation studies. The third section deals with the theoretical framework of the study (Methodology). The applied study has been dealt with in the fourth section and the fifth section discusses the conclusions and recommendations.

2. Methodology

- **Purpose of the study:** is to highlight the importance of corporate governance and its principles in the private sector companies in Iraq, because of its impact on improving and developing the performance of the control and internal audit departments in these companies. This will ensure obtaining financial information that is credible, objective and reflects the actual reality of these companies' work.
- **Significance of the study:** There is an urgent need to apply corporate governance and its principles to the private sector companies in Iraq and to develop the performance of the control and internal audit function in these companies, therefore improving the control systems and internal audit in them after decline the confidence of the beneficiaries of the financial information published and detailed by these companies in addition to decline Confidence in the usefulness and importance of the work of oversight and internal audit and external audit offices in those companies after the outbreak and growing financial and administrative corruption and financial failure in those companies.
- **The hypothesis of the study:** The application of corporate governance and principles in the private sector companies in Iraq has been contributed to improve and enforce the quality of the performance and the function of control and internal audit in those companies, also strengthen the systems of control and internal audit therein and to ensure the credibility and objectivity of published information and disclosed by those companies which are submitted to interested parties related to the company in which to contribute the adoption of rational decisions related to them.

3. Previous Studies

(Study Zwilif & Algoher, 2007): This study has been dealt with the relationship between the elements of internal control systems and corporate governance and its principles. The study has concluded that the commitment to implement the internal controls and its elements will lead to effective implementation of corporate governance and its principles.

(Study Isaa, 2008) This study is concerned with the relationship between the quality of the performance of the audit departments and the internal audit principles moreover the

principles of corporate governance. The study has been concluded that the enhancement and effectiveness of the work of the internal auditing and auditing departments in the companies will lead to the success of the implementation of corporate governance.

(Fatih & Aishi, 2008): This study has been addressed the conclusion that the application of corporate governance can lead to information of quality, credibility and objectivity.

(Rasha Algred, 2008): This study analyzes the impact and relationship between the audit function and internal audit and the fees of the internal audit offices charged with auditing the financial statements of the companies.

(Hamia Haron 2013): This study has been concluded that corporate governance plays an important role in the effectiveness of the control and the internal audit function and represnts the tool through which to guarantee the efficiency of corporate management and the proper utilization of its resources.

While the current study is an addition and extension of the previous studies through the study and elicit the relationship and impact between the effectiveness of corporate governance and its principles and the quality of the performance of the function of control and internal audit and its reflection on the financial information that was published and disclosed by companies in terms of quality, credibility and objectivity in the Iraqi private sector companies.

4. Theoretical Framework

4.1. The Control and Internal Audit

The academic and professional studies dealt with several definitions of control and the internal auditing. The definition of Arab Society of Certified Public Accountants ASCA is one of the most prominent of these definitions, where the control and internal auditing is defined as one of the internal administrative functions within the structure of the company. And activities with the laws, regulations and instructions and to ensure the achievement of the typical exploitation of the resources available to the company and achieve its objectives in accordance with the plans set for them (Mohamed, 2012: 5).

In the light of the rapid economic changes in the last three decades and the collapse of many international companies and the indictment of the weakness and complicity of the function of control and internal audit in the companies and external audit offices of these companies because of the failure to give early warning of the possibility of financial failure to companies that has been highlighted the importance of corporate governance and principles and its role in enhancing the quality The role of control and internal audit of these companies and their role in protecting the financial and non-financial assets of these companies as well as evaluating the effectiveness and activities of control systems and control of the company's sections also propose plans and means that would lead to Commitment to administrative policies of those companies at last to ensure achieving the desired objectives have been planed to the company.

The academic and professional studies have established many professional standards for internal auditing which are including rules and guidelines that govern the work of the control and internal audit function and are considered as benchmarks for evaluating the performance of this function the most important of these standards is independence, professional qualification and scope of work. Internal control and internal auditing are measured through the internal audit function. With the responsibilities entrusted to it with a high degree of efficiency and efficiency to achieve the objectives of the internal audit, which is the periodic evaluation of the administrative and executive activities of the companies and to express opinions about them and to submit suggestions and observations. As well as evaluating financial and accounting procedures and policies and to be certain in achieving the objectives that have been planned by the company (Nawal, 2010: 4).

4.2. The Corporate Governance

Several academic and professional studies have addressed various concepts of corporate governance. The Organization for economic cooperation and development OECD definition is one of the most important definitions agreed upon by most studies. This definition shows that corporate governance is the set of relationships between corporate management, shareholders, board of directors and interested parties these companies. It represents the structure and construction that determine the objectives of the company in through, the means of achieving the objectives, the methods, procedures of control and follow-up, also to determine the rights and responsibility of all parties related to the company (shareholders, Management board, the high, middle and lower executive managements) guarantee the fair means of decision-making and processes of accountability, transparency and credibility in the disclosure of the administrative and financial information operations (Sameh & Riad, 2013: 9).

The Corporate governance has principles and standards have been addressed in several professional and academic studies that can be identified as follows:

- **Responsibility and accountability:** this represents the commitment of the companies to their duties towards their shareholders, employees, the community and other related parties, and to subordinate their senior executive management, internal audit and external auditor to oversight, follow-up and accountability to all relevant parties (Hermanson & Rittenterg, 2003, P: 30).
- **Justice:** this represents to respect the companies the requirements of justice and commitment to implement them by giving the rights of all parties were involved and equality of rights , duties and justice in the system of incentives and rewards among employees (Catherine & Sullivan, 2003, p: 12).
- **Laws, regulations and instructions:** By legislating the laws that are necessary to implement the corporate governance processes and principles, represented by the laws of companies and the stock market, practicing the profession of external auditing and investment, protecting employees in companies as well as the issuance of relevant professional standards and other laws is necessary to effectively implement corporate governance (Zingales, 1997, P: 2).
- **Independence:** Through granting to the regulatory agencies which are responsible for administrative and financial control represented by the Department of control and Internal Audit, External Auditor and External Audit Committee all authorities that are far from the pressures of senior management and other parties involved in the company (Jane, 2003, P: 242).
- **Disclosure and transparency:** through Disclosure of all administrative and financial information relevant to the company and required by the relevant parties. The information that has been disclosed should be permitted by credibility, truthful, objective, fair, and non-discriminatory and reflects the actual activity of these companies in addition to its publication and announcement in a timely manner (Fawzy, 2003, p: 5).

5. Evaluation the quality of the performance the function of control and internal audit

Actually the quality of the performance the control and internal audit departments have been evaluated through several measures of knowledge, competence, objectivity, accuracy and independence of internal audit. The wide knowledge of the control and internal audit department on all the procedures and activities of the company is one of the most important factors in order to determine the quality of the internal audit and the existence of internal auditors with experience and specialization in the department of internal auditing to the companies.

Additionally the participation of these auditors in the training courses and continuing education is also considers a determinant of the ef[10]ility of the department. Also the independent and objectivity of the department of control and Internal Audit and support the management of the Companies to the job of the internal audit is considered one of the most important factors for judging the quality of the performance of this activity (Samir, 2008: 12)

In w[10]t concerns controlling the performance function the quality of control and internal audit, has been representing in commitment to the standards, policies and procedures that have been planned for the audit function. There are methods and means by which the quality of the performance of these departments can be controlled. The first method is to be carried out by an independent department within the control and internal audit department itself. The department should be monitoring the extent of compliance with the quality controls through the continuous evaluation of the departm[10]s activity by taking a sample of the various activities of the control and internal audit department in addition conducting the examinations and testing to ascertain the extent of compliance with the required quality standards and specifications. The evaluation may also be carried out by an independent external department, external audit or external auditor who perform the evaluatio[10] monitoring and follow-up process and express an opinion on the quality of the performance of the External Audit and Audit Department.

5. Application study

According to the application field study, the study community represents the Iraqis companies – in private sector which has been listed in Iraq money bills market. It has been chosen ten companies in priva[10]sector as a study sample, also it has been chosen a sample of the managers of the control departments and internal audit in these companies, also it has been chosen a sample of accountants, auditors, employee in these companies.

Through surveying the views of this sample by distributing a questionnaire form on the sample group. and by using the statistical program SPSS also by adopting the statistical model [10]ear regression) and arithmetic average to measure the effect of the principles of the corporate governance on the quality of the performance of the control and internal audit departments in the sample of private sector companies. It has b[10]n used the levels of mean (weak, medium, high) to indicate the arithmetic mean.

The independent variables represented the principles of corporate governance. As shown below:

- X_1: Responsibility and accountability;
- X_2: Justice;
- X_3: Laws, regulations and instructions;
- X_4: Independency;
- X_5: Disclosure and transparency.

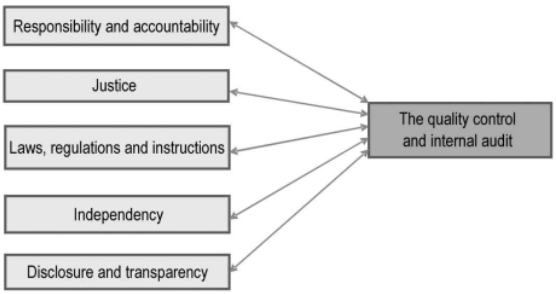
To find out the strength[10]d direction of the relationship between variable of (quality control and internal audit) and the variables of corporate governance principles, the simple correlation coefficient has been used.

Independent variable (the principles of corporate governance)	Dependent variable (quality of supervision and internal audit)	P- Value	Conclusion
X_1: Responsibility and	0.8810	0.000	Significant
X_2: Justice	0.761	0.000	Significant
X_3: Laws, regulations and	0.6700	0.000	Significant
X_4: Independency	0.8850	0.000	Significant
X_5: Disclosure and	0.6110	0.000	Significant

Correlation is significant at the level (0.05)

Table 1. The strength of the correlation betwe[10] quality of supervision and internal audit and changes in the principles of corporate governance

Table 1 presents the correlation between the variable (quality control, internal audit and changes in the principles of corporate governance, where we find that the correlation relationship is very strong between the variable of (responsibility and a-ccountability) and the variable of (quality control and internal audit at the value of .8810, P = 0.0000) (0.05), and there is also a very strong cor[10]tion between the variable (justice) and the variable (quality of control and internal audit at the value of (0.761, P[10] 0.000) and below the level of significance (0.05) (Quality of control and internal audit at the value of (0.670, P = 0.000) and below the level of significance (0.05), and there is a very strong correlati[10]etween the variable (independence) and the variable (quality of control and internal audit at the value of 0.8850, P = 0.000) and below the level of significance (0.05), also there is a strong correlation between the variable (disclosure and transparency), the value of (0.6110, P = 0.000) and below the level of significance (0.05).



From [10] figure above, the blue color is due to the adopted variable (the quality control and internal audit) and the green color is due to the variables of the principles of corporate governance, we find that the relationship between the variable and the i[10]pendent variables is very strong, an increase in any variable of the principles of corporate governance alone, the quality control and internal audit increases by the correlation coefficients of each variable of the principles of corporate governance.

In order to detect the effect of these independent variables on the separately adopted variable, we rely on simple linear regression models. Then we focus on modeling the relationship between the adopted va[6]ble and all five independent variables in one model by means of the multiple regression model.

Independent variables	Coefficients	Standard error	t-value	Pr (>|t|)	F	P-Value
Intercept	2.2333	0.4883	2.526	0.0138	26.293	0.0000
The responsibility and accountability	0.6035	0.1177	5.128	0.0000		
R^2	0.8559					
Adjusted R^2	0.8654					

Ta[10] 2. Analysis of the simple linear regression, for the principle of responsibility and accountability; the quality control and internal audit

The values were shown in Table 2 have been indicated that there is a significant relationship for the used regression model in order to model the relationship between responsibility and accountability in control and internal auditing. This is evident through the value (F) that has been calculated by (F = 26.293), which is significant. The adjusted **R^2** value, we have found that the variable responsibility and accountability can interpret the variables in dependent variable (quality control and internal audit) by amount 86.47% resulting by the changing in the variable the responsibility and accountability, the rest due to uncontrolled external variables. Also The variable of responsibility and accountability has a positive relationship with a significant impact on the quality control and internal audit. Therefore, increasing the variable re[10]nsibility and accountability by one unit leads to increasing the quality control and internal audit by (0.6035).

Independent variables	Coefficients	Standard error	t-value	Pr (>|t|)	F	P- Value
Intercept	1.7087	0.5134	3.328	0.00141	21.788	0.000
Justice	0.5777	0.1238	4.668	0.00001		
R²	0.942					
Adjusted R²	0.9[illegible]					

Table 3. Analysis of the simple linear regression of the beginning of justice and the quality control and internal audit

By the results of table 3 which have represented the model regression that was used to model the relationship between the justice and quality control and internal audit which consider very strong model in representing this relationship, this is clear through the value of F which was accounted (F= 21.7888), which is significant. From the adjusted **R²** value, we find that the variable of justice can explain the change in the dependent variable (quality control and internal audit) by 94.9% due to change in the variable of justice, and the remaining 5.1% is due to random variables that are not controlled. (PR = 0.00001). Therefore, increasing the variable of justice by one unit increases the quality control and the internal audit by (0.5777).

Independent variables	Coefficients	Standard error	t-value	Pr (>|t|)	F	P- Value
Intercept	1.1102	0.4998	2.221	0.0296	35.958	0.000
The laws principle, regulations and instructions	0.7225	0.1205	5.996	0.0000		
R²	0.9626					
Adjusted R²	0.9743					

Table 4. Analysis of the simple linear regression of the laws principle, regulations and instructions and the quality control and internal audit

Through the results were recorded in Table 4, the regression model used to evaluate the relationship between laws, regulations and instructions and the quality control and internal audit is also a very strong model in the representation of this relationship. This is evident by the value of F, (F = 35.958) is significant. From the adjusted R^2 value, we find that the variable laws, regulations, and instructions can account for 97.4% variance in the dependent variable (quality control and internal audit) caused by variance in the variable laws, regulations and instructions, and the remaining 2.6% is due to uncontrolled external variables. Also, we find that the variable laws, regulations and instructions have a significant moral relationship with the quality control and internal audit. This is explained by the value of Pr = 0.00001. Therefore, increasing the variable laws, regulations and instruction by one unit increases the quality control and internal audit by 0.5777.

Independent variables	Coefficients	Standard error	t-value	Pr (>|t|)	F	P- Value
Intercept	-1.227	8.589	-0.143	0.887	19.464	0.000
The beginning of independence	0.411	1.070	0.39	0. 00498		
R²	0.8066					
Adjusted R²	0.8177					

Table 5. Analysis of the simple linear regression of the beginning of independence and the quality control and internal audit

Through the results were recorded in Table 5, the regression model was used to illustrate the correlation between the variable of independence and the quality control variable and the internal audit is also a strong model in the representation of this relationship. This is evident by the calculated F value (F = 19.4643) is significant. From the adjusted R^2 value, we find that the independent variable can explain the change in the approved variable (quality control and internal audit) by 81.77% of the total variance, and the rest is due to uncontrolled external variables in the studied model. The variable of independence also has a significant correlation with the quality control and internal audit (Pr = 0.00498). T[illegible], increasing the independence variable by one unit increases the quality of the internal audit by 0.411.

Independent variables	Coefficients	Standard error	t-value	Pr(>|t|)	F	P- Value
Intercept	2.0321	0.4234	4.7991	0.0296	13.258	0.000
Disclosure and transparency	0.6523	0.1205	3.0988	0.00000		
R²	0.8926					
Adjusted R²	0.9045					

Table 6. Analysis of the simple linear regression of the disclosure and transparency and the quality of control and internal audit

Through the results were recorded in Table 6, the regression model used to model the relationship between disclosure and transparency and the quality control and internal audit is also a very strong model in the representation of this relationship. This is evident by the calculated value of F = 13.258 is significant. From the adjusted R^2 value, we find that the variable disclosure and transparency can account for 90.4% of the total variance in the dependent variable (quality control and internal audit), while the remaining 9.6% is due to uncontrolled external variables. Also, we find that the variable of disclosure and transparency has a significant relationship with the quality of internal control and auditing. This is explained by the value of Pr = 0.00000. Therefore, increasing the variable of disclosure and transparency by one unit can increase the quality control and internal audit by 0.6523.

Independent variables	Coefficients	Standard error	t-value	Pr (>|t|)	F	P- Value
Intercept	0.6415	0.3835	0.3472	1.6727	24.587	0.000
Responsibility and accountability	0.6355	0.121	5.252	0.0000		
Justice	0.8474	0.5784	1.465	0.0214		
Laws, regulations and instructions	0.8756	0.1894	4.0623	0.0000		
independency	0.1242	0.0145	8.565	0.0000		
Disclosure and transparency	0.8321	0.1258	6.6145	0.0000		
R²	0.9214					
Adjusted R²	0.[illegible]54					

Table 7. Analysis the multiple linear regression of the principles of corporate governance, quality control and internal audit

From Table 7 we note that the value of Adjusted R2 is 0.9354, which means 93.54% of the variation (variance) of the dependent variable (quality control and internal audit) which can be explained by a set of independent variables (responsibility and accountability, (Independence, disclosure and transparency), this ratio indicates that the multiple regression model can absorb the studied data. Also, our model has a very high power in representing the variables had been studied.

From the results were shown in Table 7, we note that the five independent variables have significant relationships with the dependent variable (quality control and internal audit), so the relationships can be described as below.

1. Variable Liability and Accountability. This variable has a positive relationship with a statistically significant effect on the dependent variable (quality control and internal audit). Each increment in the variable (responsibility and accountability) will result in an increase of 0.6415, with suppose the stability of other Independent variables.

2. The variable of justice. This variable has a positive relationship with a statistically significant effect on the dependent variable (quality control and internal audit). Each unit of increasing in the variable (justice) will result in an increasing in the variable (quality control and internal audit) by 0.6355, with suppose the stability of the remaining Independent variables.

3. Variable of laws, regulations and instructions. This variable has a positive relationship with a statistical effect on the dependent variable (quality control and internal audit). Each unit of increasing in variable (laws, regulations and instructions) will increase the variable (quality control and internal audit) by 0.8756, with Assuming the stability of the remaining independent variables.

4. Independence. This variable has a positive relation with a statistically significant effect on the dependent variable (quality of control and internal audit). Each unit of increase in the variable (independence) will result in an increase in the variable (quality control and internal audit) by 0.1242 with assuming the stability of the remaining independent variables.

5. Disclosure and Transparency. This variable has a positive correlation with a statistically significant effect on the dependent variable (quality control and internal audit). Each increment in the variable (disclosure and transparency) will result in an increase in the variable (quality control and internal audit) by 0.8321, according to the study sample.

The results were shown in the tables above it reveals that all t variables having a significant effect on the approved variable (quality control and internal audit) according to the sample of the study.

6. Conclusions

According to the theoretical and applied study, the study display the following conclusions:

- ❑ The modern concept of control and internal audit represents that it is the means by which able the process of examination and evaluation can be conducted on the effectiveness of the control methods by verifying the validity of the financial data in the financial statements and studying internal control methods in the joints and activities of the company as a whole and evaluating the risk management Which will improve and develop the performance of the activity of the economic units.
- ❑ Appearing The role of the existence of the activity of control and internal audit and interest in it , and the relationship and impact between this role and corporate governance and its ciples after the scandals and financial collapses and misinformation in the financial statements of many international companie at have been bankrupt and stop activity in addition to cases of administrative and financial corruption in private sector companies in most developing countries Including Ira
- ❑ The quality of the audit is representing by acting the performance of the control and internal audit activity efficiently and effectively in accordance with local and international professional standards. It is also the extent of compliance with the rules of professional conduct in carrying out the activity of internal audit and auditing, in addition to the ability of this activity to identify the strengths and weaknesses in the control system and internal controls, the internal auditor shall have the usual professional care for their activity in the performance of their work.
- ❑ Corporate governance and its principles work on developing and improving the competitive capabilities of companies, to carry out monitoring and evaluation of the senior management of companies and to strengthen accountability processes to ensure the protection of the rights and interests of the parti involved in companies in addition to working to combat cases of administrative and financial corruption and to ensure the credibility and objectivity of financial information published by those Companies.
- ❑ The process of proper application of corporate gover ce requires mechanisms to support this application. The control and internal audit ac y is one of the tools and mechanisms to ensure the proper application of corporate governance and to ensure the quality of the control and intern audit activity. This requires compliance and work according to the principles of corporate governance represented by (responsibility and accountability, Instructions, independen disclosure and transparency), which has a significant impact on the quality of the performance of the activity of the control and internal audit departments in those companies.

7. Recommendations

In light of the conclusions reached by the study, we present the following recommendations:

- ❑ Work on legislating laws and regulations related to the process of speeding up and activating the legal commitment to apply corporate governance and principles in Iraqi private sector companies.
- ❑ To take care of the role of control and internal audit in the Iraqi private sector companies, activate their role and comply with the relevant internal and international professional auditing standards and abide by the principles of corporate governance and the rules of professional conduct. This has a positive impact on the quality of this job and activities and support of risk management processes.
- ❑ The establishment of committees, supporting the work of control and internal audit in companies such as the external audit committee, which will support and strengthen the work of both internal and external auditing and ensure the independence of their work.

8. Future Prospects

After we have finished in maintaining the problem of the dy that has been represented the impact and relationship to the principles of corporate governance on the quality of the function of control and internal audit in private sector companies in Iraq, our current study and its explanations is highlighted many problems that can be examined and can be studied in the future, for example:

- ❑ The impact and relations between corporate governance and its principles in public sector companies in Iraq.
- ❑ The impact and relationship between the external audit mmittees and the external auditor and their role in activating the function of control and internal audit and the effectiveness of corporate governance and ensuring the quality of financial information published and disclosed.

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Does Motivation Mediate the Effects of Employee Staff Empowerment, Talent, Working Environment, and Career Development on Staff Performance?

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Abstract

This study aims to empirically examine the mediated effect of motivation on the influences of staff empowerment, talent, working environment, and career development on performance of public officers of the Aceh government, Indonesia. 390 questionnaires were distributed to all staff of Aceh's governor office and analyzed using structural equation modelling (SEM) approach. The study documented that staff empowerment, talent, working environment, and career development significantly influenced both motivation and staff performance. Additionally, the study found that motivation significantly mediated the effects of staff empowerment, talent, working environment, and career development on the performance of public officers of the Aceh government, Indonesia. These findings implied that any efforts to improve the staff performance, it should be focused on the enhancement of staff motivation by providing conducive working environment, professional staff empowerment, talent, and career development schemes.

Keywords: *staff empowerment; working environment; career development; talent; motivation; employee performance; public agency.*

1. Introduction

Public organizations and their staff performances have remained in the spotlight of human resource management experts. Previous studies have explored the determinants of staff performance of public organizations. Newstrom and Davis (2002) identified that staff performance is significantly influenced by the interaction between ability and motivation. Staff ability is formed by the interaction between knowledge and expertise, while motivation is formed by the interaction between attitudes and situations. Priyadharshany (2015) and Armstrong (2016) documented that staff performance is influenced by the personal, working system, internal, and external factors. Ricardo and Wade (2001) further claimed that staff performance also influenced by individual behaviour, education and training, concepts and instruments, and staff management development. If the staff performed well in all their official duties, it leads towards higher level of organizational performance (Ulrich et al., 2012). Thus, from the organizational view, it is extremely important to study the determinants of staff performance.

As a public agency that is expected to provide excellent public services in the province of Aceh, Indonesia, the provincial offices of the Aceh's Governor should have staff with excellent performance. The staff of the Aceh government office is a crucial human resource for the realization of organizational goals. Staff should not only act as the objects that must always get the attention and protection of the organization but also plays a pivotal role as a subject to determine the progress of the organization. To realize these functions, the staff needs to be directed, fostered, and guided in order to carry out their functions in accordance with the goals of the organization. Staff empowerment, talent management, career development, and a comfortable working environment are necessary determinants to improve staff motivation and subsequently their performances.

Staff empowerment refers to self-fulfilment of individuals in the form of work, enhancement competence, determination of self-attitudes, and influence on work (Rowlinson, 2007; Daily et al., 2012). Psychologically, it consists of intrinsic and extrinsic motivation and is closely related to performance (Yi Li, 2015). Empowerment is the efficiency and effectiveness of the organization, through a comprehensive analysis of organizational competencies and management (Tutar et al., 2011; Thomas & Velthouse, 1990; Prahalad & Hart, 2002; Sharif et al, 2013; Quigley & Taymon, 2006). Previous studies showed that intrinsic motivation for career management and career success are needed to improve staff performance. Meanwhile, extrinsic motivation is as a psychological and motivational aspect of the relationship between intrinsic motivations, which has implications for the intrinsic motivation so that the working environment guides management development.

Other studies further found that the organizational culture, working environment and motivation have a significant relationship with staff performance (Matthews et al., 2002; Pratono & Mahmood, 2015; Renah & Setyadi, 2014; Malik et al., 2011; Ortega et al., 2001). Pratono and Mahmood (2015) suggested a proper and innovative leadership strategies are needed to create conducive working relating to structure, internal, and external adjustments to improve motivation and finally staff performance (Imran et al., 2012; Mutlu, 2015; Jayaweera, 2015; Gunaseelan & Ollukkaran, 2012).

Career development also plays crucial role in enhancing staff performance. Career development is a long-term process to improve staff abilities and motivation so that they could enhance organizational performance (Kariuki & Murimi, 2015;

Yu & Lee, 2015). Oduma et al. (2014), Duclos et al. (2012), and Schmid and Pathak (2017) found motivation as a mediating variable that links career development to the staff performance.

Furthermore, McKinsey (2015) found staff talent as one of the important factors affecting motivation and staff performance. Talent refers to the ability of staff to produce a good performance constantly, brought as the capital of life. Garavan et al. (2012) and Cappelli (2016) claimed that the existence of talent management is an innovative approach to support the achievement of organizational targets. Talent is an individual and organizational capital in a high-value aggregate extension and becomes an advantage in organizational competition. Every employee of an organization has a number of talents consisting of talents and interests, and the organization itself can use tools to create talent management systems (Berger & Berger, 2011).

Based on the above discussion, it can be concluded that there have been differences in the opinions of experts about the factors influencing staff performance. Some scholars such as Armstrong (2015), Ulrich (2017), Khan (2013), and Mckinesy (2015) focused more on individual internal factors, while experts like Hennessey and Bernardin (2003) and Prahalad and Hart (2002) focused more on external factors determining staff performance. However, some studies have investigated both internal and external factors affecting staff performance. For example, Sharif et al. (2013) have examined the effects of staff empowerment, motivation, working environment and career development on staff performance and found these factors significantly affected staff performance. Tutar et al. (2011), Meyerson and Dewettinck (2012), and Nzuve and Bakari (2012) also found that staff empowerment has a significant effect on staff performance. Furthermore, Oduma and Were (2014) found that empowerment and quality of work life, training, and career development have played an important role in improving staff performance.

The above-reviewed studies showed mixed empirical findings, some studies found a positive and significant influence of motivation, work environment, career development, and staff talent on their performances, while some others showed insignificant influences of motivation, working environment, and career development on staff performance. Thus, this provides more motivates for the present study to further empirically explore the influence of staff empowerment, working environment, talent, and career development on motivation as well as on their performance, taking the officials of Aceh Governor's agency as the case of study. It also attempts to explore the mediated effect of motivation on the influences of staff empowerment, talent, career development, and working Environment on staff performance. The findings of this study are expected to shed some lights for the improvement of staff motivation and subsequently their performance.

The rest of the study is structured as follows. Section 2 reviews selected relevant studies to the investigated issue. Section 3 provides the empirical model as the basis for analysis of the study. Section 4 discusses the findings and finally, Section 5 concludes the study.

2. Literature review

This section discusses the previous related studies on the determinants of staff performance and motivation, focusing on staff empowerment, working environment, career development, and talent.

2.1. Staff performance

According to Armstrong (2015) and Bensalah et al. (2018), staff performance refers to time quality, the level of achievement of results on the implementation of certain official tasks. It shows the speed, quality, service, and value in the work process. Staff performance is influenced by personal factors, working systems, and internal and external factors (Priyadharshany, 2015).

To measure staff performance, Gomes et al. (2017) and Gomes and Liddle (2009) used eight indicators, namely: i) work quantity – shows the number of official tasks accomplished by the staff; ii) work quality – shows the level of quality of official tasks accomplished by the staff; iii) work creativity – shows number of the authenticity of ideas of the staff related to the resolve official problems; iv) cooperation – indicates the willingness of the staff to work together with other organizational fellow members; v) dependability – shows the awareness and trustworthiness of the staff to the completion of official assigned tasks; vi) work initiatives - the spirit of staff initiatives to carry out new tasks and fulfil their responsibilities; vii) knowledge – covers the breadth of knowledge and skills of the staff on their tasks' completion; and viii) personal qualities – includes staff personality, leadership, hospitality, and personal integrity. These indicators of staff performance are used in the study to measure the staff performance of the governor office in Aceh, Indonesia.

2.2. Motivation

Motivation is a process of psychological encouragement of individual needs as a basic process comprehensively based on competitiveness according to perception and personality. It is a process to generate and encourage behaviour and performance (Luthans et al., 2015). This implies that motivation is a process of stimulating staff in carrying out an official task in order to determine the intensity, direction, and individual provisions in their effort to achieve performance. Motivation is one of the important factors influencing staff performance. Allen (2016), Ayobami (2013), Shahzadi et al. (2014), Muogbo (2013), Woo (2014), Dobre (2013), and Subekti and Setyadi (2016) found a positive and significant influence of work motivation on staff performance.

To measure the work motivation, several indicators have been introduced by Turner (2017) and Robbins et al. (2010), namely: aggressiveness, creativeness, quality, discipline, capability, initiatives, willingness to succeed, persistent and skilful, and dare to accept challenges. This study uses these indicators to measure work motivation of the provincial governmental officers in Aceh, Indonesia.

2.3. Staff empowerment

Staff empowerment is essentially a potential governance process to optimize their capabilities through career coaching, training, and other forms of the staff development program to improve their contribution towards the higher level of staff and organizational performances. It is a motivational concept of self-fulfilment, indicated by the enhancement of motivation of individual work in the form of meaning, competence, self-determination, and impact (Spreitzer, 1995). Staff empowerment is targeted to improve the efficiency and effectiveness of the staff as well as organization through a comprehensive process of analysis of the competence and systemic management of the organization (Al-Sulaiti, 2015).

To measure empowerment, Khan et al. (2013) introduced six-indicators, namely: i) desire; ii) Trust; iii) confident; iv) credibility; v) accountability; and vi) communication. This study uses these indicators to measure staff empowerment of the government officers in Aceh, Indonesia.

2.4. Career development

Career development is an issue in human resource study while career management is a series of activities in attracting, developing, and maintaining high-potential employees at all levels to achieve the objectives of organizational strategic objectives. Empirically, several previous studies have investigated the effect of career development on staff performance and found that staff career development has a significant effect

on staff performance (Oduma et al., 2014; Yu & Lee, 2015). Peter and Dabale (2014) also found a positive and significant relationship between career development and motivation as well as staff performance.

To measure the staff career development, Iverson (2016) and Kwenin (2013) used the following indicators: career options, job opportunities, career supports, career enhancements, the willingness of the leader to promote, and leadership concern. These indicators are used in the present study to measure staff career development of the government officers in Aceh, Indonesia.

2.5. Working environment

The working environment is a circumstance where staff does their daily official tasks (Jayaweera, 2015). A conducive work environment provides a sense of security and allows employees to work optimally. It affects staff emotions and working spirit. Working environment includes work relationships that are formed between fellow staff and work relations between subordinates and superiors as well as the physical environment in which staff is working (Kale & Mazaheri, 2014). The working environment is one of the important factors influencing staff performance. Jayaweera (2015) found that the working environment has significant effect on staff performance, mediated by motivation. Imran et al. (2012) also found that transformational leadership and working environment have a significant effect on staff performance in the Pakistani economic manufacturing sector.

To measure working environment, six-indicator have been introduced by Luthans et al. (2015), namely: working conditions, work safety and security, workplace conditions, status, organizational procedures, quality of technical supervision from relationships between peers, superiors, and subordinates.

2.6. Talents

Staff talents are important to be observed by the leaders of each work units. The concept of talent management has been popularized by the McKinsey Consulting Group in 1998. Schiemann (2013), talent management is a strategic approach to ensure the organization in achieving its objectives. It refers to the ability of staff to produce a good performance constantly, brought as the capital of life (McKinsey, 2015). Garavan et al. (2012) and Cappelli and Keller (2016) claimed that the existence of talent management is an innovative approach to support the achievement of organizational targets. It is an individual and organizational capital in a high-value aggregate extension and becomes an advantage in organizational competition. It is also a series of processes as a whole, starting from employee planning consisting of recruitment, placement, to employee development (Lewis & Heckman, 2006). Every staff of an organization has a number of talents consisting of talents and interests, and the organization itself can use tools to create talent management systems (Berger and Berger, 2011).

To measure the staff talents, this study used indicators proposed by Lance and Berger (2004), namely: acquisition, activation, retention, and development.

3. Research method

To gather the data, full-structured questionnaires have been distributed to all 390 staff of governor office of Aceh, Indonesia. Six-variables are measured based on the above-mentioned indicators with a modified Likert scales of 1-5. In this study, staff performance is treated as the endogenous variable, motivation is as the mediating variable, while the staff empowerment and working environment, talents, and staff career development are treated as the exogenous variables.

To empirically explore the mediated effect of motivation on the influences of staff empowerment, talent, career development, and working environment on staff performance at the governor office of Aceh province, Indonesia, the structural equation modelling (SEM) approach is adopted and analysed using the LISREL software. The following models are estimated:

$$MOT = \gamma_{11}SEMP + \gamma_{12}SCDEV + \gamma_{13}STAL + \gamma_{14}WENV + \varepsilon_1 \quad (1)$$

$$SPERF = \gamma_{21}SEMP + \gamma_{22}SCDEV + \gamma_{23}STAL + \gamma_{24}WENV + \gamma_{25}MOT + \varepsilon_2 \quad (2)$$

where SEMP is the staff empowerment, SCDEV is the staff career development, STAL is the staff talent; WENV is the working environment, MOT is the motivation, SPERF is the staff performance, γ_{ii} are the estimated loading coefficients of the investigated variables, and ε_i are the structured error terms.

Before the proposed research models are estimated, series of instrument and classical assumption tests of validity, reliability, normality, outlier, and goodness of fit test are conducted first.

4. Findings and discussion

Before the data are analyzed, the study has ensured the validity and reliability of indicators to measures all investigated variables, the normality of the variables, non-existence of outliers, and goodness of fit of the estimated models. The findings of the study reported below have passed all the tests and showed that the estimated models are the better fit.

4.1. Respondents' perception

Table 1 illustrated the perception of the respondents on the investigated variables. The staff of the governor office of Aceh, Indonesia perceived that staff empowerment, career development, working environment, talents, motivation, and staff performance were in a good category, indicated by a mean value of greater than 3.40 and it was statically significance at the 1% level. Specifically, the working motivation showed the highest mean value of 4.162, followed by staff performance (4.131), working environment (3.854), talent (3.835), staff empowerment (3.716), and career development (3.664). The career development program was seen as the lowest mean value compared to the other variables. This indicated that career development program has been not conducted to develop equitable the staff of the public agency.

Variable	Mean	Std. Deviation	t-statistics	Remarks
Staff empowerment	3.716***	0.609	2.934	Good
Career development	3.664***	0.692	2.165	Good
Working environment	3.854***	0.615	4.136	Good
Talent	3.835***	0.649	3.761	Good
Motivation	4.162***	0.446	9.482	Good
Staff Performance	4.131***	0.427	9.502	Good

Note: *** indicates statistical significance at the 1% level.

Table 1. Respondents' perception of the variables

4.2. Effects of staff empowerment, career development, working environment, and the talent on motivation and staff performance

Table 2 provided the hypotheses testing for the effects of staff empowerment, career development, working environment, and talent on motivation and staff performance. As observed from the table, all the exogenous variables significantly affected the motivation of the staff at the Governor Office of Aceh, Indonesia at the 1% level of significance. These findings implied that the Governor office has rightly implemented the staff empowerment program, career development scheme, talent management, and conducive working environment which led to the improvement of their staff's motivation.

Meanwhile, with the exception of career development, all other exogenous variables were also found to significantly affect

the staff performance at the Governor Office of Aceh, Indonesia at the 1% level of significance. These findings further that the Governor office has rightly implemented the staff empowerment program, talent management, and conducive working environment to enhance their staff performance. However, the career development program has insignificant effect on staff performance. Unequal opportunity for the staff to develop their career due to limited promotional opportunities could contribute to insignificant relationship between career development and staff performance. Additionally, limited budget allocated for staff career development program has been an obstacle for the staff to join the staff development program which hindered their career development and subsequently their performance. Career development programs which were not relevant to the daily official tasks have insignificant towards enhancing staff performance. Finally, the practices of collusion of staff career development program are believed to contribute towards the insignificant effect of career development on staff performance.

Variable's interactions	Estimated coefficient	t-statistics	Remarks
SEMP → MOT	0.278***	4.468	Reject H_0
CDEV → MOT	0.313***	4.489	Significant
WENV → MOT	0.342***	3.977	Significant
STAL→ MOT	0.177***	3.104	Significant
SEMP → SPERF	0.134***	2.175	Significant
CDEV → SPERF	0.097	1.463	Insignificant
WE → SPERF	0.148***	2.322	Significant
STAL→ SPERF	0.124***	2.163	Significant

Note: *** indicates statistical significance at the 1% level.

Table 2. Direct effects of staff empowerment, career development, working environment, and talent on motivation and staff performance

The findings of this study are in harmony with the empirical findings of previous studies such as Matthews et al. (2002), Malik et al. (2011), Sharif et al. (2013), Tutar et al. (2011), Meyerson and Dewettinck (2012), and Nzuve and Bakari (2012). Oduma et al. (2014) found that empowerment and quality of work life, training, and career development have played an important role in improving staff performance. These studies found that staff empowerment, talent, and working environment were among the important determinants of motivation and staff performance.

4.3. Mediated effects of motivation on the influences of staff empowerment, career development, working environment, and talent on staff performance

Table 3 provided the findings of the indirect effect the staff empowerment, career development, working environment, and talent on staff performance through staff working motivation. As observed from the table, the study found that motivation has mediated significantly the effects of staff empowerment, career development, working environment, and talent on staff performance. These findings implied that any efforts to improve staff performance should be focused on the enhancement of staff working motivation.

Indirect effect	Estimated coefficient	t-statistics	Remarks
SEMP → MOT → SPERF	0.183***	3.931	Significant
CDEV → MOT → SPERF	0.211***	4.160	Significant
WENV → MOT → SPERF	0.233***	4.807	Significant
STAL → MOT → SPERF	0.124***	2.908	Significant

Note: *** indicates statistical significance at the 1% level.

Table 3. Mediated effects of motivation on the influences of staff empowerment, career development, working environment, and talent on staff performance

As for the mediated effect, the study found that the motivation has partially mediated the effects of staff empowerment, talent, and working environment on staff performance, indicated by significances of both direct effects of staff empowerment, talent, and working environment on staff performance and indirect effect of staff empowerment, talent, and working environment on staff performance through motivation. However, the motivation has fully mediated the effect of career development on staff performance, indicated by the insignificant direct effect of career development on staff performance but significant indirect effect of career development on staff performance through motivation. These findings further proved that the enhancement of motivation would automatically and significantly contribute to the improvement of staff performance.

Our findings on partial mediated effects of staff empowerment, talent, and working environment on staff performance are in line with many previous studies such as Kariuki and Murimi (2015) and Lee et al. (2015). The findings of Oduma et al. (2014), Duclos et al. (2012), and Schmid and Pathak (2017) on significant effect of motivation as mediating variable that linked career development to the staff performance also supported our study.

Finally, the entire findings, both direct effects of staff empowerment, career development, working environment, and talent on staff performance, and indirect effects of staff empowerment, career development, working environment, and talent on staff performance through motivation is summarized in Figure 1.

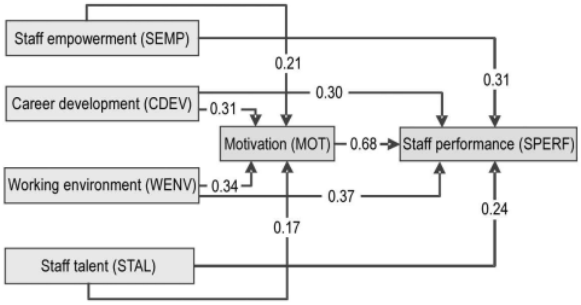

Figure 1. Findings of estimated SEM

5. Conclusion

This study empirically explored the mediated effect of motivation on the influences of staff empowerment, talent, working environment, and career development on the performance of public officers of Aceh government, Indonesia using the structural equation modelling (SEM) approach. The study documented that staff empowerment, talent, working Environment, and career development significantly influenced both motivation and staff performance. Additionally, the study found that motivation significantly mediated the effects of staff empowerment, talent, working environment, and career development on the performance of public officers of the Aceh government, Indonesia. These findings implied that the efforts to improve the staff performance should be focused on the enhancement of staff motivation by providing conducive working environment, professional staff empowerment, talent, and career development schemes.

To provide a comprehensive empirical finding of the mediated effect of motivation on the influences of staff empowerment, talent, working environment, and career development on staff performance of public agencies, further studies are suggested to cover more public agencies in the region. Comparing the factors affecting the staff performance between public and private organization would also provide a further contribution towards the enhancement of staff performance by exchanging experiences among those organizations.

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Effect of Electronic Customer Relationship Management on Customers' Electronic Satisfaction of Communication Companies in Kuwait

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Abstract

The study aims to investigate the impact of electronic customer relationship management on customers' Electronic satisfaction of Communication companies in Kuwait. The study population consisted of all of the customers of the telecommunications companies in Kuwait, a convenience sampling was taken from customers electronically dealing with companies, a sample of 450 customers were selected , (392) questionnaires retrieved. To achieve the objectives of the study, a number of statistical tools and methods were used. The study showed that there is an impact of E-customer relationship management on customers' Electronic satisfaction. Based on the study results, the researchers recommend managers and decision makers of the telecommunications companies in Kuwait to invest heavily in advanced technologies and human resources in order to understand customers' behaviors and provide maximum value from customers.

Keywords: *electronic customer relationship management; electronic satisfaction; communication companies; Kuwait.*

1. Introduction

Advanced development in the field of communication and information technology has increase the scope of e-commerce, e-business, e-CRM, electronic supply chains, e-tickets, e-education and e-government. The rapid growth in Internet-based technologies continues to be critical to business-to-consumer and business-to-business environments, which encourages the development of E-CRM, which allows for many organizations to compete(s). The electronics customer relationship management concentrates on using internet to interact between providers and customers (Chang et al, 2005). The electronic customer relationship management is a Technology system with a combination of software, hardware, applications and management support. In essence, e-CRM is used by organization members at different levels of management to interact with their customers electronically (Tauni et al., 2014).

According to Bergeron (2004), E-CRM is customer relationship management on the web and includes the use of e-mail, e-commerce activity and any other internet based touch points. E-CRM is basically a marriage of CRM and e-commerce (Yaeckel et al., 2002, p. 247). Electronic customer relationship management (eCRM) is the latest technique which used by the business organizations now a day to increase and enhance their marketing skills (Romano et al., 2004).

Electronic satisfaction has become the main focus of many researchers (Lin 2003; Feinberg et al., 2002; Cao et al., 2004). Satisfaction has a significant impact on customer loyalty and retention, as well as a reflection on corporate profitability (Alshurideh et al., 2017; Al-Hawary, 2013a; Al-Hawary, 2013b; Al-Hawary and Harahsheh, 2014; Al-Hawary and HUSSIEN, 2016; Anderson & Srinivasan, 2003). Satisfaction is often used as a measure of business success and business ability to achieve goal (Feinberg et al., 2002; Gable et al., 2008).

There was a weakness in research in the electronic customer relationship management, and electronic customer satisfaction (within the researcher limit of knowledge), so this study will cover the gap in the literature in the field of the study. The importance of the study is that it seeks to develop a mechanism to increase the performance of the telecommunication companies operating in Kuwait by achieving higher levels of customers' satisfaction. The current study represents an initial step towards the research direction to do more studies on Electronic customer relationship management and electronic satisfaction. Therefore; this study came to examine the impact of e-customer relationship management on the electronic satisfaction of the telecommunications companies in Kuwait.

2. Theoretical Framework and Hypotheses Development

2.1. Electronic Customer Relationship Management

Electronic customer relationship management (E-CRM) is an electronic commerce approach that is used by business organizations to identify customers and achieve their satisfaction for the purposes of profitability (McKinney et al, 2002). E-CRM if successfully implemented will enable customers to access convenient information and services about the products helping customers to evaluate and make purchase decision (Yaeckel et al., 2002).

E-CRM is concerned with attracting and keeping profitable customers with an objective to reduce loss profitable customers (Romano and Fjermestad, 2001). E-CRM is defined as 'technology-centred' relationship marketing and ensuing advantages, incorporating traditional customer relationship management (CRM) tactics and electronic business market place applications used by business organization to keep customer relations (Al-Hawary and Aldaihani, 2016; Salehi et al., 2015).

Rosenbaum (2002) concluded that e-customer relationship management revolves around employees, processes and technology, while Romano and Fjermestad (2003) noted that there are five main areas that are not limited to exchange in terms of research in e-CRM: E-business customers, business models in e-customer relationship management, knowledge management for e-customer relationship management, and e-customer relationship management technology, human factors in e-customer relationship management, and each of these areas includes other sub-areas.

2.2. Concept of Customer Electronic Satisfaction

Satisfaction is an evaluation of the customer's experience with the service, and this assessment is achieved either with a positive feeling, indifference or a negative feeling (Al-Hawary, and AL-SMERAN, 2016; Anderson and Sullivan, 1993; Al-Hawary & Abu-Laimon,2013). Shih (2011) and Wixdom and Todd (2005) examined (Ease of use, benefit) as determinants of customer satisfaction. Devaraj et al. (2003) noted that the utility and ease of use of online shopping, followed by low economic costs, including time and effort to find the right product and price, and deal with costs and quality of service are the factors that affect customer satisfaction which determine their references and preferences, and thus determine their choices (Al-Hawary and Al-Menhaly, 2016; Al-Hawary and Metabis, 2012; Al-Hawary, 2012). Feinberg et al. (2000) stated that more than (68%) of customers do not return to visit the company due to "bad service experience" with other factors such as price (10%) and product related issues (17%).

Parasuraman et al. (1991) suggested that there are five elements in the quality of service that customers evaluate company's product: reliability, responsiveness, assurance, empathy for caring, and caring for the individual. The researchers took different approaches and focused on a variety of aspects in achieving customer satisfaction with customer-based e-commerce.

2.3. Electronic Customer Relationship Management and Customer Electronic Satisfaction

E-CRM enables business organization to understand the customers' future expectations level, which will provide the organization with a deeper look at the level of consumer satisfaction (Song et al, 2005). E-CRM is a flexible and secure channel method to gain high profitability, retain customers, and maintain relationships with customers in a convenient and effective manner (Huang, 2010). Electronic CRM minimize costs relating to contacting customers and transfers some responsibility to the customer, which minimize administrative and operational costs for the business, therefore achieving high profitability. Electronics customer relationship management (E-CRM) is measuring tool of the business performance in order to help the organization to maximize its profit and enhance customer loyalty towards the company product and service (Feinberg et al, 2002).

Alhaiou (2011) argued that electronic customer relationship management affects online consumer satisfaction and loyalty. Feinberg and Kadam (2002) examined the relationship between customer relationship management characteristics and customer satisfaction, and emphasized that businesses must build their websites with integrated CRM features which lead to customer satisfaction, and in this way companies can reduce costs. Shih et al (2011). examined some factors, including ease of use and perceived utility as determinants of customer satisfaction in the context of the Internet. Alim and Ozuem (2014) concluded that electronic customer relationship management is effective tool in maintaining relationships with customers which enhances satisfaction. Electronic relationship management enabling business organizations to recognize the profitable customer, to increase the satisfaction and loyalty (Tian and Wang, 2017).

Devaraj et al. (2003) found that the benefit and ease of use of online shopping, followed by low economic costs, and service quality are factors that affect customer satisfaction, and thus determine their marketing channel reference. CRM assists sales force automation, customer service and marketing automation together with channel partner management (Akhlagh, Daghbandan, & Yousefnejad, 2014). Feinberg et al. (2002) found that the lack of correlation between CRM characteristics and their results may be the reason for the failure of CRM implementation. They also indicated that the low culture of how CRM features can be found on the company's website may cause the customer's reluctance to follow the company's products, resulting in large sums of money spent on features that are not important or irrelevant to customers. Based on these findings the following hypothesis is suggested:

H: Electronic customer relationship management influence customer electronic satisfaction of the telecommunications companies in Kuwait

More specifically:

H1a. Website design directly influences customer electronic satisfaction of the telecommunications companies in Kuwait.

H1b. Search ability directly influences customer electronic satisfaction of the telecommunications companies in Kuwait

H1c. Privacy and security directly influences customer electronic satisfaction of the telecommunications companies in Kuwait.

H1d. Delivery time directly influences customer electronic satisfaction of the telecommunications companies in Kuwait.

3. Research Framework

As shown in Figure 1, the study investigates the impact of Electronic customer relationship management on Customer electronic satisfaction of the telecommunications companies in Kuwait, where Electronic customer relationship management are the independent variable and are positively related to Customer electronic satisfaction as the dependent variable.

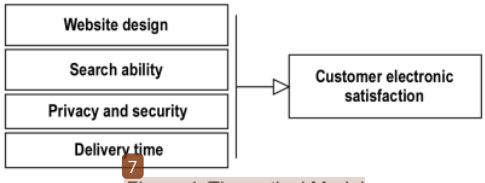

Figure 1. Theoretical Model

4. Methodology

4.1. Data Collection

A questionnaire was used to collect data. The questionnaire was divided into three divisions: division A consisted of the demographic variables of the sample. division B contained questions aimed at gauging the respondents' evaluation of Electronic customer relationship management practiced by the telecommunications companies in Kuwait were adapted from previous studies (Aldaihani and Bin Ali 2018; Ming-Hsien et al., 2007; Feinbergand Kadam, 2002), using a five-point Likert scale. The following practices were focused on; Website design

(6 statements) Search ability on Website (5 statements), Privacy and security (4 statements), and Delivery time (5 statements). division C contained questions aimed at evaluating the level of Customer electronic satisfaction (5 statements) adopted from previous studies (Aldaihani and Bin Ali, 2018;Kim et al., 2007; Bart et al., 2005; Liu et al., 2008). All constructs were measured using five-point Likert scales with anchors strongly disagree (= 1) and strongly agree (= 5). All items were positively worded.

4.2. Operational definitions

Website design: the general image of the personality of telecommunications companies in Kuwait to deal with the electronic sales of customers through the introduction and use of colors and logos on the website includes: company website, products offered and product prices, providing online purchasing and shipment tracking features, which determine the customer preferences on the Internet.

The search ability: including the presentation of the company's products and their characteristics when the customer wants to see a large number of criteria in the selection of the product to facilitate and support the decision-making process.

Privacy and security: refers to the security of the website for telecommunications companies in Kuwait in terms of its ability to protect the personal information of customers from unauthorized use or disclose their personal information in a manner that may affect their decision to conduct transactions through the company's website.

Delivery time: Indicates the ability of communication companies in Kuwait to deliver products on time to the customer, resulting in a positive effect in removing doubts and distrust in e-shopping online and supports confidence in the company's website and gives the customer a sense of comfort and encourages him to buy from the same site In many times.

Electronic Satisfaction: refers to the extent of the customer satisfaction for all the processes that are handled by the purchase of products from the telecommunications companies in Kuwait so that repeat the deal with companies based on the generated satisfaction.

4.3. Sample

The study population consisted of all of the customers of the telecommunications companies in Kuwait counted (3) companies (ZAIN Company, Wataniya Company, and VIVA company), a convenience sampling was taken from customers electronically dealing with companies, with reference to the sample schedule (Bartlett et al., 2002), a sample of 450 customers were selected to represent the study population, the researchers distributed the questionnaires to the study sample. (392) questionnaires retrieved. After reviewing the questionnaires show that there are (12) extremely unfit for statistical analysis, that had the study sample size (380).

Variable		Frequency	%
Age group	less than 25	113	29.73
	25- less than 35	75	19.73
	35- less than 45	85	22.37
	45- less than 55	82	21.58
	55 and more	25	6.59
Gender	Male	336	88.43
	Female	44	11.57
Educational level	Less than Bachelor	155	40.79
	Bachelor	187	49.21
	Higher study	38	10.00

Table 1. Sample characteristics

Females make (11.57 percent) of the customers on the other hand Males respondents represented (88.43 percent) of the sample. The largest group of respondents (29.73 percent) was aged less than 25. The next largest group (22.37 percent) was aged 35- less than 45. Smaller groups of respondents were aged 55 and more (6.59 percent). With regard to educational level, respondents with Bachelor degrees were the largest group of respondents make (49.21 percent), respondents with Less than Bachelor make (40.79 percent). Finally, respondents with higher study degrees make (10 percent). The characteristics of the sample are represented in Table 1.

4.4. Reliability and validity of the survey instrument

The instrument with 25 items was developed based on two variables Electronic customer relationship management as independent variables with four dimensions; Website design (WD1-WD6), Search ability on Website (SA7-SA11), Privacy and security (PS12-PS15), and Delivery time (DT16-DT20). Customer electronic satisfaction as dependent variables with five statements (ES1-ES5).The instrument was evaluated for reliability and validity.

Construct and item	Loadings	Communalities	KMO	Variance	Reliability
Website design **(WD)**			.654	71.364	0.801
WD1	0.63	0.65			
WD2	0.65	0.68			
WD3	0.62	0.64			
WD4	0.66	0.69			
WD5	0.71	0.73			
WD6	0.59	0.62			
Search ability on Website **(SA)**			.736	65.364	0.826
SA7	0.64	0.66			
SA8	0.59	0.63			
SA9	0.58	0.62			
SA10	0.62	0.67			
SA11	0.57	0.59			
Privacy and security **(PS)**			.719	63.975	0.792
PS12	0.63	0.65			
PS13	0.62	0.64			
PS14	0.66	0.69			
PS15	0.71	0.73			
Delivery time **(DT)**			.746	59.637	0.834
DT16	0.59	0.62			
DT17	0.56	0.59			
DT18	0.62	0.67			
DT19	0.57	0.61			
DT20	0.63	0.66			

Table 2. Factor analysis of Electronic customer relationship management

Construct and item	Loadings	Communalities	KMO	Variance	Reliability
Customer electronic satisfaction (ES)			.709	68.367	0.826
ES1	0.59	0.63			
ES2	0.56	0.59			
ES3	0.53	0.58			
ES4	0.57	0.62			
ES5	0.60	0.64			

Table 3. Factor analysis of Customer electronic satisfaction

Factor analysis and reliability analysis were used in order to determine the data reliability for the Electronic customer relationship management, and Customer electronic satisfaction. The results of the factor analysis and reliability tests are presented in Table 2 and Table 3. All individual loadings were above the minimum of 0.5 recommended by Hair et al. (1998). For exploratory research, a Chronbach α greater than 0.79 is generally considerate reliable (Nunnally, 1978). Thus it can be concluded that the measures used in this study are valid and reliable. Kaiser-Meyer-Olkin has been used as Pre-analysis testing for the suitability of the entire sample for factor analysis as recommended by Comrey (1978), the value of The Kaiser-Meyer-Olkin measure was used to assess the suitability of the sample for each unifactorial determination. The KMO values found (see Table 2 and 3) are generally considered acceptable (Kim and Mueller, 1978). All factors in each unifactorial test accounted for more than 60.000 per cent of the variance of the respective variable sets. This suggests that only a small amount of the total variance for each group of variables is associated with causes other than the factor itself.

4.5. Descriptive Statistics Analysis

Table 4 indicates that the customers of the telecommunications companies in Kuwait evaluate Website design (with the highest mean scores, i.e. M = 3.74, SD=0.731) to be the most dominant of Electronic customer relationship management and evident to a considerable extent, followed by Delivery time (M = 3.67, SD = 0.760), Privacy and security (M = 3.62, SD = 0.840), and Search ability on Website (with the lowest mean scores M = 3.57, SD = 0.613). With regard to Customer electronic satisfaction, customers of the telecommunications companies in Kuwait evaluate their satisfaction (with the moderate level, i.e. M = 3.64).

Dimension	Mean	Standard deviation
Electronic customer relationship management	3.65	
Website design	3.74	0.731
Search ability on Website	3.57	0.613
Privacy and security	3.62	0.840
Delivery time	3.67	0.760
Customer electronic satisfaction	3.64	

Table 4. Descriptive analysis of Electronic customer relationship management and Customer electronic satisfaction

5. Test of Hypothesis

Multiple regression analysis was employed to test the hypotheses. In this model, Customer electronic satisfaction acts as the dependent variable and Electronic customer relationship management, as the independent variables. From the result as shown in Table 5, the regression model was statistically significant (F = 91.504; AdjR2 = .551; P = .000). The AdjR2 is 0.551, which means that 55.1 per cent of the variation in Customer electronic satisfaction can be explained by Website design, Search ability on Website, Privacy and security, and Delivery time. The proposed model was adequate as the F-statistic = 91.504 was significant at the 5% level ($p < 0.05$). This indicates that the overall model was reasonable fit and there was a statistically significant association between Electronic customer relationship management and Customer electronic satisfaction.

Table 5 also shows that Website design ($\beta = 0.162$, $p < 0.05$), Search ability on Website ($\beta = 0.239$; $p < 0.05$), Privacy and security ($\beta = 0.168$, $p < 0.05$), and Delivery time ($\beta = 0.271$, $p < 0.05$) had a significant and positive effect on Customer electronic satisfaction. This provides evidence to support H1a, H1b, H1c, and H1D. Based on the β values Delivery time has the highest impact on Customer electronic satisfaction followed by Search ability on Website, Privacy and security, finally Website design.

Model	Standardized Coefficients	T	Sig.	Collinearity Statistics	
	ß			Tolerance	VIF
Website design	0.162	3.237	0.001	0.258	1.245
Search ability on Website	0.239	4.473	0.000	0.434	1.358
Privacy and security	0.168	3.428	0.000	0.397	1.841
Delivery time	0.271	5.351	0.000	0.845	1.6416

Note: R2 = 0.553; Adj. R2 = 0.551; Sig. F = 0.000; F-value = 91.504; dependent variable, Customer electronic satisfaction; $p < 0.05$

Table 5. Regression Summary of Electronic customer relationship management and Customer electronic satisfaction (N = 380)

6. Discussion

The study aimed at examining the impact of electronic customer relations management on the electronic satisfaction of the customers of the Kuwaiti communication companies. The study found that the existence of the effect of the independent variable in the dependent variable which is consistent with the theoretical literature and the previous studies that dealt with the subject (Song et al., 2005; Huang, 2010; Feinberg et al., 2002; Alhaiou, 2011; Feinberg and Kadam, 2002; Alim and Ozuem, 2014; Tian and Wang, 2014). The attention of the communication companies in Kuwait in building their websites in an attractive and easy way and containing all the information of interest to the customer which contribute significantly to the satisfaction and continuity of dealing with the company and ease of communication, as the client's deal with the company through its website facilitates to receive service with less time and less effort, in addition to the financial abundance achieved by the customer by obtaining the service from the place of existence without trouble, and also providing of service by the company through their websites reflected positively on the company and that the customers personal reviews are less, which happens to save the company of the workforce, which is reflected in the achievement of profits and directing part of the profits in improving the quality of service and management of its websites in a better way.

The ability to search through website of the company provides customer good feeling and willingness to deal with the company, and the ability to provide advice and thus become involved in the design of the service, which reflects on achieving high levels of satisfaction, and also contribute to help the company in designing the service as the customer sees fit, which reduces the many attempts in the design of the service, and reduces the cost of design service to the company, which is reflected on the achievement of the objectives of both customer and the company.

It is clear from the answers of customers that they feel completely confidential in their dealings with the company and that they are treated in person and are completely confidential and that their personal information is respected and not traded with others. And this causes the satisfaction of the customer in

dealing, which achieves a state of satisfaction with the service, in addition to the use of websites speed up the process of providing the service without the need to review the company and meet the employee, which contributes to the high levels of satisfaction.

7. Recommendations and Direction for Future Research

Based on the study results, the researchers recommend managers and decision makers of the telecommunications companies in Kuwait to invest heavily in advanced technologies and human resources in order to understand customers' behaviors and provide maximum value from customers, they have also provide higher levels of trust in interactions with people, and to allow for customers through their website comprehensive information about the provided services. Managers and decision makers must spread out to include other electronic channels and technologies such as voice reaction systems, mobile telephones and customer established communication centers in order to manage customer's interaction with no human face-to-face contact which saves customer's time and effort

The study conducted on telecommunication companies in Kuwait, future research may be conducted on another country, and to be conducted on manufacturing companies to see if the results are different. The study linked electronic customer relationship management with customer electronic satisfaction; new research may be conducted to link electronic customer relationship management with customer electronic loyalty, or with brand image. The study showed that there is an impact of e-customer relationship management on customer e-satisfaction. These variables can change rapidly so other studies to adopt other factors of e-customer relationship management not included in the current study.

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Intellectual Capital, Business Performance, and Competitive Advantage: An Empirical Study for the Pharmaceutical Companies

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Abstract

The purpose of this research is to formulate a study of the influence of intellectual capital on Business Performance and Competitive Advantage of the pharmaceutical industry in East Java. The research method used a quantitative approach, and using the techniques of data collection by survey method with the distribution of questionnaires, in depth interviews, documentation and observation. These results indicate that the hypothesis is accepted and supported by the evidence of empirical data are human capital affects on structural capital, relational capital, and competitive advantage. Structural capital affects on relational capital and competitive advantage. Relational capital affects on business performance and business performance affects on competitive advantage. Meanwhile the other result form this research are human capital not affects on business performance and structural capital not affects on business performance.

Keywords: *intellectual capital; business performance, competitive advantage.*

1. Introduction

Intellectual capital (IC) is crucial for pharmaceutical companies because its classification as a high IC intensive (Woodcock & Whiting, 2009) (Hermawan & Mardiyanti, 2016). Pharmaceutical companies require the management of intellectual capital because they are knowledge-based and utilizing massive number of research. In addition, pharmaceutical companies conduct many innovations, knowledgeable activities, and interactions between people and technology, and they also depend on ICs as renewal sources (Bharathi Kamath, 2008). Intellectual capital is proven to have an influence on company performance, competitiveness and prosperity (Nick Bontis, Chua, Keow, Richardson, & Richardson, 2000) (Y. S. Chen, 2008).

However, the results of a study (Hermawan, Ekonomi, & Sidoarjo, 2013) stated that managers of pharmaceutical companies in Indonesia have lack of understanding and take less advantages from intellectual capital as intangible assets of companies. Consequently, Indonesian pharmaceutical companies cannot compete in exporting markets, especially in South-East Asia (SEA) (Sampurno, 2007) even though the opportunity is huge because of the single market creation of pharmaceutical industry in South-East Asia. This situation should be taken as an opportunity by pharmaceutical industry in Indonesia to develop intellectual capital either individually or integrated thus can improve the business performance and competitive advantage.

By putting concerns in the importance of intellectual capital for pharmaceutical companies, then it is necessary to research the influence of intellectual capital on business performance and competitive advantages. This study was distinct from previous article (Cabrita & Bontis, 2008) examining only the influence of intellectual capital on business performance in the Portuguese banking industry without considering competitive advantage. This study also differs from (Hermawan, Ekonomi, Muhammadiyah, & Herlina, 2013) identifying and connecting intellectual capital with firm performance using qualitative approach.

2. Literature Review

The basic and appropriate theory for this research is the resource based theory (Wernerfelt, 1984). This is because intellectual capital is one of intangible assets that, if developed, would become an instrument or mean for the company to improve its business performance and competitiveness. As an intangible asset, intellectual capital consists of three components namely capitals of humans, structures, and relations-customers. All of these three intellectual capitals, individually or in synergy, can improve the performance and competitiveness of the company (Hermawan, 2015).

This is possible because if the company has employees with high capabilities, good competencies, and well satisfaction, then the company is well-governed with established structure, clear processes, and decent organizational culture. Furthermore, with marketing capabilities, satisfied customers, propitious market intensity, and great community relationships, these also can improve the performance of businesses.

The result from previous study (Sharabati, Jawad, & Bontis, 2010) depicted that intellectual capital variables significantly and positively correlated with business performance. They contended that relational capital had the greatest significant value compared to other variables of human and structural capitals. Other results described that there was a positive relationship between intellectual capital and enterprise performance (M. Chen, 2004). Apart from the positive and significant impact on business performance, intellectual capital also has a positive and significant impact on the competitiveness of companies. The result of the study depicted that three elements of green intellectual capitals consisting of green human, green structural, and green relational capitals positively affected the competitive advantage of small and medium enterprises in electronic field in Taiwan.

3. Methodology

This research was a quantitative study (Creswell, 2009) that connected and examined the influence of intellectual capital on business performance and competitive advantage with five variables and 31 indicators. For intellectual capital, there were three variables, namely human capital with three indicators (capability, satisfaction, and creativity of employees), structural capital with three indicators (information system, organizational process, organizational culture), and relational capital with four indicators (basic marketing capability, loyalty of customers, market intensity, and community relations). For business performance variable, authors employed 10 indicators i.e. leader of industry, future outlook, profit, profit growth, sales growth, return on assets after tax, return on sale after tax, competitive response, success of new product launch, and company success as a whole. For competitive advantage variable, there are 11 indicators i.e. costs, product quality, research and innovation capabilities, management, profit, company growth, main influencer or motivator, image, product imitation, creative idea, and position of the company. Determining the variable indicators of this research was based on the choice of 10 managers of pharmaceutical companies in East Java when conducting depth interview and Focus Group Discussion (FGD).

This research was performed in pharmaceutical companies, member of the Association of Pharmaceutical Company of Indonesia (Indonesian: Gabungan Perusahaan Farmasi Indonesia, GPFI) in the region of East Java. This organization had as many as 44 pharmaceutical companies. The respondents of this study were financial managers and accounting employees. The survey was conducted by distributing questionnaires either directly or through mail, and email. Data analysis was conducted using Structural Equation Modeling method (SEM) because all variables in this study cannot be measured (latent variables). The analysis used to test the hypothesis was Partial Least Square (PLS) which was a variance-based structural equation (SEM) that could simultaneously perform the measurement models and structural tests.

4. Result

Based on the data analysis of hypothesis test with Partial Least Square (PLS), results were presented in Figure 1 and Table 1.

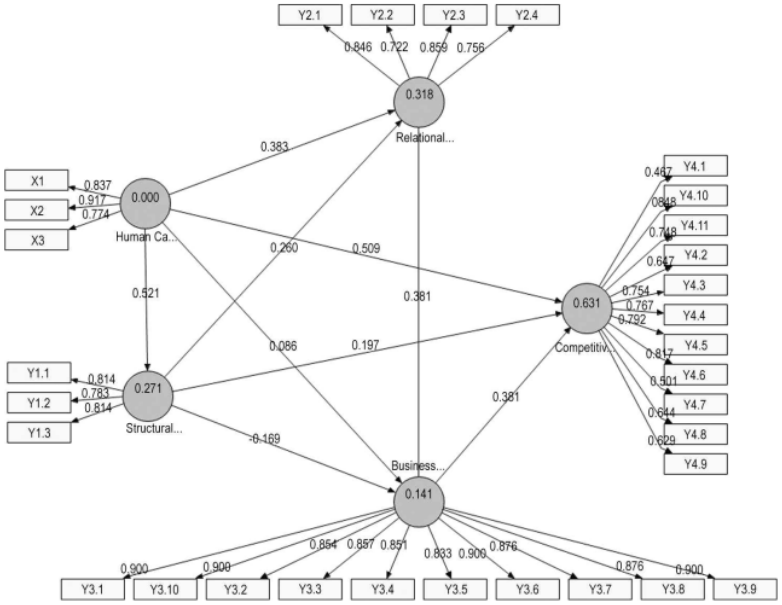

Figure 1. Diagram of Path of Hypothesis Testing Results

H	Influence			Coeff. *Path*	$T_{calculated}$	Explanation
H1	*Human Capital (X)*	→	*Structural Capital (Y1)*	0.520	10.675*	Significant
H2	*Human Capital (X)*	→	Relational Capital (Y2)	0.382	4.039*	Significant
H3	*Human Capital (X)*	→	Business Performance (Y3)	0.085	0.568	Insignificant
H4	*Human Capital (X)*	→	Competitive Advantage (Y4)	0.508	8.244*	Significant
H5	*Structural Capital (Y1)*	→	Relational Capital (Y2)	0.260	3.077*	Significant
H6	*Structural Capital (Y1)*	→	Business Performance (Y3)	-0.169	1.345	Insignificant
H7	*Structural Capital (Y1)*	→	Competitive Advantage (Y4)	0.196	2.809*	Significant
H8	Relational Capital (Y2)	→	Business Performance (Y3)	0.381	2.863*	Significant
H9	Business Performance (Y3)	→	Competitive Advantage (Y4)	0.381	3.938*	Significant

Table 1. Hypothesis Testing Results

Based on Table 1, results of hypothesis testing are identified. Meanwhile, the acceptance criteria of hypothesis were 5% level with a value of T_{table} 2.015. This means that if the value of $T_{calculated}$ is more than 2.015 then the hypothesis is accepted and vice versa. Thus, there were seven hypotheses received, namely Hypotheses 1, 2, 4, 5, 7, 8, and 9, and there were two rejected hypotheses, namely Hypotheses 3 and 6.

The result of Hypothesis 1 acceptance implied that human capital affects the structural capital. This shows that human capital is the spirit of how a company is managed by creating systems, procedures, mechanisms, structures and organizational processes and even organizational culture as parts of the structural capital. This is because human capital relates to the human resources having competence, capability, and knowledge to manage the company. Hypothesis 1 supported other studies indicating that human capital positively and directly influences the structural capital (Shih, Chang, & Lin, 2010) (Hsu, 2006).

The result of Hypothesis 2 acceptance denoted that human capital affects the relational capital. This makes sense because to conduct relationships with external parties (e.g. customers, suppliers, creditor, debtor, and broader society) requires adequate knowledge, capability and competence of employees so that the relations can be executed properly. Similarly, to manage the images of product, service, corporate, customer loyalty, customer satisfaction, negotiation skills, relationships with the community will depend heavily on human capital of company. Hypothesis 2 supported the research revealed that human capital positively and directly influences on structural capital (Maditinos, Šević, & Tsairidis, 2010).

The result of Hypothesis 3 rejection implied that human capital had no effect on business performance. This statement is in line with the diamond specification model (N. Bontis, 1998) revealing that there is no relation between human capital and business performance. Instead, the appropriate link is between human capital and (1) relational and (2) structural capitals, which then both capitals are categorized as business performance. This describes that human capital can affect business performance only through structural and relational capitals. Hypothesis 3 supported the diamond specification model, yet not supporting the previous research (Gogan, Artene, Sarca, & Draghici, 2016) (Bollen, Vergauwen, & Schnieders, 2005).

The result of Hypothesis 4 acceptance meant that human capital affects the competitive advantage. This proves that companies with good human capital such as competence, capability, knowledge can create more competitive products than competitors. Also, cost efficient and creative ideas would be better compared to other counterparts. The results Hypothesis 4 supported the study stating that human capital positively and directly affects the competitive advantage (Chahal & Bakshi, 2014) but there is also other research suggesting human capital cannot directly affect the competitive advantage, instead they must go through relational capital (Yaseen, Dajani, & Hasan, 2016).

The result of Hypothesis 5 acceptance depicted that structural capital effects relational capital. This proves that organizations with strong structural capital will respect the culture of employees trying new things, being innovative, creative, and not afraid in failure. Meanwhile, relational capital activities are mostly related to product innovation, product image, service innovation, customer satisfaction, customer loyalty and community engagement. Hence, structural capital allows employees with high creativity and innovation, which then will increase positive performance of relational capital. Hypothesis 5 supported a study describing that structural capital positively and directly affects relational capital (do Rosário Cabrita, Landeiro de Vaz, & Bontis, 2007) (Nick Bontis & Fitz-enz, 2002).

The result of Hypothesis 6 rejection showed that structural capital did not affect business performance. This also makes sense because structural capital affects more relational capital. It means structural capital in form of system, procedure, strengthening relational capital (e.g. establishing procedures in promotion, product image, relation with society and others). Subsequently, relational capital affects business performance. The result of Hypothesis 6 did not support the results of research stating that the structural capital effect on business performance (Örnek & Ayas, 2015).

The result of Hypothesis 7 acceptance described that structural capital effects relational capital. It is acknowledged that companies with good structural capital in systems, procedures, working mechanisms, organizational structures, and corporate culture will make companies more well-managed than competitors, and have more research capabilities and innovations. The results of Hypothesis 7 supported the research that contended that structural capital had a positive and direct effect on relational capital (Abazeed, 2017).

The result of Hypothesis 8 acceptance implied that relational capital affects the business performance. It is known that if the company is capable to manage a good relational capital such as giving satisfaction to consumers for the sake of loyalty to company's product or service, business performance will then increase. Also, creating a good relationship with the community for a good image in the eyes of society will improve business performance easily and will become advantage for firms. The results of Hypothesis 8 supported the research suggesting relational capital had a positive and direct effect on business performance (Sharabati, Shamari, Nour, Durra, & Moghrabi, 2016).

The result of Hypothesis 9 acceptance meant that business performance affects the competitive advantage. It is understood that a company that has a good performance can win the competition with other companies in the same industry. Another argument is that the relationship is reciprocal i.e. business performance can either affect or be affected by the competitive advantage (Majeed, 2011).

5. Conclusion

Results identified that human capital affected structural capital, relational capital, and competitive advantage. Structural capital affected relational capital and competitive advantage. Relational capital influenced business performance. Business performance had an effect on competitive advantage. Other results showed that human capital had no effect on business performance, and structural capital had no effect on business performance.

6. Limitation and Future Research

The limitation of this study was in the selection of the ideal indicator for each variable based on in-depth interview with key informants. For future research, elaborating appropriate literature review is suggested, and adding other variables such as knowledge management. Pharmaceutical companies can make the results of this study as a reference to improve business performance and competitive advantage by understanding, identifying and integrating intellectual capital components.

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Risk Taking Investment as the Interaction Effect of Loss Aversion and Information (Pilot Test)

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Abstract

The purpose of pilot test of this research is to test the interaction of loss aversion and information to the decision of risk taking investment. The information obtained by investor was positive or negative determined by the low or high level of risk taking investment. Furthermore, the method of pilot test of this research was experimental laboratory within subject design 22 factorial design. The hypothesis test employed alpha index was meant to determine the low or high risk on the participants taking part. Interaction test employed post hoc with Bonferroni model. The test result of hypothesis from pilot test showed that the participants in the gain domain tended to have lower risk taking than that of in the loss domain. Test result of interaction showed that there were some differences of all treatment groups and there was a significant effect between information in gain domain and loss din to risk taking. Meanwhile, the other result from the interaction of loss aversion and information in both gain and loss domain had significant effect to the risk taking. Moreover, the loss aversion both in gain domain and the loss one did not have a significant effect to the risk taking. The limitation of research post test was dealing with the number of participants that was only eleven. This number was then divided into two groups are gain and loss. However, this research provided some value to investor that in decision making of investment, he had to be capable of managing and controlling some psychological factors dealing with knowledge improvement. The novelty of this research was that decision making of investment was not only influenced by external factor but also the internal one, especially dealing with somebody's psychology.

Keywords: *risk taking; gain domain; loss domain; pilot test.*

1. Introduction

The return and risk level of investment determines the courageous level of someone to the risk taking level of investment.(Seo, Goldfarb and Barrett, 2010) said that risk taking could be classified into two, namely less risk taking and greater risk taking. Some one classified as risk averse is the one who does not have a courage in risk taking. On the other hand, risk seeking is the one who has a courage in risk taking.

The courageous level of someone in risk taking of investment is influenced by many factors. (Pavabutr, 2002) said that personally some one tended to behave refractive that might lead him to make a systematic mistake in decision making. This statement was confirmed by (Mittal, 2010). He said that the decision making for investment was controlled by eagerness, purpose, prejudice bias, and emotion.

Decision making of investment is influenced by many factors. Therefore, the researcher limits on two factors only, namely loss aversion and information. According to (Kahneman, 1979), loss aversion in prospect theory showed that a person/someone would hold loss longer and sell stock more quickly in the gain time. When someone encounters loss he will tend to be more cautious and sensitive rather than to face gain although nominally they are the same (Kahneman, Knetsch and Thaler, 1990) and (Haigh and List, 2005).

Furthermore, the research conducted by (Mbaluka, Muthama and Kalunda, 2012) was found that individual investor tended to have loss aversion in decision making of investment. Meanwhile, the research result of (Sert *et al.*, 1999) was found that investor in gain domain showed that there was a risk averse. On the other hand, when he was in a position of loss domain, he would tend to show risk seeking. (Seo, Goldfarb and Barrett, 2010), their research result showed that in loss position a participant tended to be courageous to take a risk but on the other hand, in gain position it did not show the significance of risk taking (Seo, Goldfarb and Barrett, 2010).

The other factor which influenced the courage level or the level of risk taking in decision making is information. The research conducted by (Cassotti *et al.*, 2012) showed that information was performed through a picture or a story at first either exciting or not. Meanwhile the research conducted by (Huangfu and Zhu, 2014) and (Dunegan, 1993) showed that positive information influenced someone to make a decision more quickly due to the system of intuitive and heuristic decision making. On the other hand, with negative information someone tended to make his decision later due to the system of decision making that seems to be more rational and analytic. Moreover,(Kaufmann and Weber, 2013),(Mittal and Ross, 1998) said that information influenced the risk taking of investor; there was a tendency of negative information influencing risk seeking and positive information influencing risk averse. On the other hand, the research result conducted by (Seo, Goldfarb and

Barrett, 2010) showed that the pleasing or positive information and unpleasing or negative one did not significantly affect to the risk taking.

Based on the research gap which was used as research base, that was to raise the phenomena on how investor takes a decision on risk taking in his investment affected by loss aversion or information.

Moreover, this paper was written as the following steps. At first, literature review and hypothesis was presented as the supporting theory of this paper. Then, methodology included experimental design, number of participants, treatment and measure. The next was research result, discussion, research limitation and conclusion. However, this paper writing was used to explain the steps how this research was conducted in this post test.

2. Literature Review and Hypothesis

Traditional finance has a basic assumption that all participants both financial participants, institution and market agent that has rational behavior. The other assumption is that all participants or market agent know that all information is still available. One of the traditional finance theories is efficient market theory (EMH) by (Malkiel and Fama, 1970). This theory was said that basically a person always conducts rationally (Shiller, 2003). The reason is that the assets value, for example the price of stock is usually connected with the best information about its fundamental value. Furthermore, the traditional finance trend explained that it was in a definite condition.

However, the definite condition in traditional finance was not capable of explaining when it was encountered with indefinite/uncertainty condition. Many factors could influence this uncertainty condition, one of them was psychological aspect. Furthermore, the uncertainty condition could be explained in behavioral finance (Thaler *et al.*, 1997). Behavioral finance was a science discussing about financial behavior which was affected by psychology (Shefrin, 2001).The support of behavioral finance believed that a person as an individual in investment market does not always behave/conduct rationally and he is not always in a definite market due to the psychological bias, (Kiyilar and Acar, 2013); (Hoffman, 1972). Furthermore, (Pavabutr, 2002) said that investor had a tendency of biased behavior by making systematic mistakes in investment decision. (Kiyilar and Acar, 2013) said that one of the factors of behavioral finance, (Shefrin, 2001)someone did investing was affected by his behavior and mood. (Kahneman, 1979) said a person / a man was in uncertainty condition that might cause his decision change from that of predicted to the theory of fundamental economy.

In line with the explanation above, it could be concluded that based on (Baker and Nofsinger, 2010), there was a difference principal between traditional finance and behavioral finance. They said that traditional finance was based on economic theory. Meanwhile, behavioral finance was focused on psychological aspect combined with economic theory.

One of the theories belonged to behavioral finance was prospect theory (Kahneman, 1979) (Kahneman and Tversky, 2013). This theory said that everybody had a different tendency when he had to make a decision between the two prospects, gain and loss. The basic principal of prospect theory might cause someone have a tendency not to behave rationally. He was unwilling to work hard to obtain gains rather than losses. This basic principal was explained by (Kahneman and Tversky, 1979) in a hypothetical value function. As it was stated by (Levy, 1992) that individual person tended to make some consideration when he was in a loss position rather than gain. This might encourage him to have risk seeking when he was in a loss domain and risk averse when he was in gains domain. Different risk caused by different domain could determine the risk taking level of investor especially dealing with investment (Kahneman and Tversky, 1979); (Neale *et al.*, 1986).

Moreover, (Mittal, 2010) also said that some factors that often used to influence and change a process in decision making of investment such as overconfidence, framing effect, reference dependence, loss aversion, overreaction, under reaction, etc. Those of some others could be seen from its demography, such as education, gender, age, income, environment, etc.

Some factors that often used to influence the risk taking level were such as loss aversion and information. (Kahneman and Tversky, 1979) said that loss aversion happened if someone could hold loss longer but he would sell his stock sooner when the price rose or he had got some profit. This statement was also supported by some other opinions such as (Thaler *et al.*, 1997), (Kahneman, Knetsch and Thaler, 1990), (Haigh and List, 2005). Their opinions basically stated that loss aversion was a kind of deep regret. This would make somebody be more cautious when he had a loss rather than a pleasure when he got some gain/profit although its value was about the same. (Vieider, 2009) said that loss aversion might be caused by the two factors of income, gain and loss. In detail, this statement could be explained in 'A Hypothetical Value Function' by (Kahneman and Tversky, 1979).

When someone gets some information, she or he is usually influenced by his or her own psychology especially from affective dealing with emotion and cognitive dealing with intellectual knowledge. As it was stated by (Johnson, 1975); (Gorenflo and Crano, 1998), perspective taking was explaining how someone processed the information in decision making which was influenced how someone comprehended, reacted, and received some perspective from one situation encountered. Furthermore, information could be positive or exciting, and negative or not exciting, (Cassotti *et al.*, 2012). The kind of information could influence the level of risk taking. Unexciting information encouraged someone to make a decision longer because it required rational and analytical thought (Dunegan, 1993); (Huangfu and Zhu, 2014). On the other hand, exciting information might influence the decision making more quickly because it was affected by intuitive and heuristic thought (Dunegan, 1993); (Huangfu and Zhu, 2014).

Loss Aversion determined much on the level of risk taking investment (Kahneman and Tversky, 1979). In determining the courage of risk taking, investor was influenced by domain problem. When investor was in gain domain, he tended to have low risk taking. On the other hand, when he was in loss position, he tended to have high risk taking. As it was stated in a hypothetical Value (Kahneman and Tversky, 1979). The low risk taking when it was in gain domain, the investor tended to sell his stock soon. On the other hand, when it was in loss domain with high risk taking, the investor would tend to hold his stock longer. This was as the research result conducted by (Kahneman and Tversky, 1979); (Neale *et al*., 1986); (Seo, Goldfarb and Barrett, 2010). Therefore, this explanation became the reference of the research hypothesis.

H1: Participant in gain condition had lower risk taking rather than that of loss condition.

Information either positive or negative has a significant effect on the level of risk taking. The research result conducted by (Dunegan, 1993); (Kaufmann and Weber, 2013); (Huangfu and Zhu, 2014) showed that positive information influenced someone's decision to be low risk taking. On the other hand, negative information could influence someone's decision to be high risk taking. Basically, the research results conducted by (Mittal and Ross, 1998); (Kühberger, 1998); (Mishra, Gregson and Lalumiere, 2012); (Fischer *et al.*, 2008) showed that negative or unexciting information might cause participant's behavior to have high risk taking or risk seeking. Meanwhile, the research results conducted by (Kühberger, 1998); (Chang, Yen and Duh, 2002); (Fischer *et al.*, 2008); (Huangfu and Zhu, 2014) basically stated that positive or unexciting information affected to the low risk taking or risk averse.

H2: Participants provided with positive information would

have lower risk taking rather than those of negative one.

Loss aversion of gain domain as it was shown in security price could increase significantly. This condition encouraged someone to do decision making with low risk taking (Kahneman, 1979); (Neale *et al*., 1986). This might be aimed at finding a safe position by selling stock sooner to get some gain or profit. Furthermore, positive information affected to the low risk taking (Dunegan, 1993); (Kaufmann and Weber, 2013); (Huangfu and Zhu, 2014); If that gain is supported by obtaining positive information, it will encourage to do low risk taking or getting more risk averse.

On the other hand, if loss position is due to the fall price, it may cause financial loss. If this happens, someone will tend to do high risk taking (Kahneman and Tversky, 1979); (Neale *et al*., 1986). The act of high risk taking is done to hold up longer security because it is expected that the price will rise again. Furthermore, negative information will affect to high risk taking (Dunegan, 1993); (Kaufmann and Weber, 2013); (Huangfu and Zhu, 2014). Then participant in loss position, he will get negative information about the movement decrease of stock price so that he will tend to take a courageous risk or risk seeking.

Based on the explanation above, the research hypothesis is as follows:

H3: The participants in gain condition and provided with positive information have lower risk taking than those in loss condition and negative information.

3. Methodology

Experiment Design

(Pavabutr, 2002) This research employed experiment procedure, within subject design and matrix 2x2 factorial design. Meanwhile the independent variable was risk taking. The two factors to be manipulated to determine whether the risk taking was low or high were Loss Aversion and Information. Each factor had two levels. The two levels of loss aversion were gain and loss (Kahneman, 1979); (Levy, 1992); (Thaler *et al*., 1997); (Vieider, 2009). Furthermore, information consisted of positive and negative level (Seo, Goldfarb and Barrett, 2010); (Cassotti *et al*., 2012). This research was divided into two groups, namely gain and loss.

Participant

The participants of pilot test consisted of 11 (eleven) students of S.1 (5 boys and 6 girls) majoring in financial management who had already taken some subjects like financial management and portfolio investment at University Muhammadiyah Malang. Those students were classified into two groups. Six participants belonged to gain group (consisting of 3 boys and 3 girls) and the five other belonged to loss group (consisting of 2 boys and 3 girls). Their average ages were about 21 years old.

Treatment

The research treatment employed 4 (four) combinations of treatment. The manipulation of loss aversion and level gain was situated with the price presentation of stock that was higher than that of buying and in reverse, the level loss with the price presentation of stock that was lower than that of buying (Thaler, 1980); (Novemsky and Kahneman, 2005). Furthermore, information manipulation with positive level was situated with the movement increase of previous stock price and in reverse, the negative level with the movement decrease of previous stock price (Seo, Goldfarb and Barrett, 2010).

Measures

Before conducting ANOVA test, the first step of that we had to do the T-test was to find the gender difference, then we determined alpha index (Weber and Camerer, 1998). Alpha index was used to determine the level of risk taking from each gain and loss group. Furthermore, the positive alpha index showed in the low risk position and in reverse, the negative alpha index showed in the high risk position. Meanwhile, the formula of Alpha index used by (Weber and Camerer, 1998) was as follows:

$$Alpha\ Index, I = \frac{(G,I - S,I)}{TA} \quad (1)$$

Note:
G,I = The total number of sold stocks when gain/profit or winner
S,I = The total number of held stocks when loss or loser
TA = The total number of stocks owned by every participant

After alpha index was found the next analysis was to do variant analysis test by using ANOVA. ANOVA test was used to know whether there was a difference between the four groups of treatment from the two participant groups, gain and loss. The difference among the four groups of treatment could happen if the significance with p-value < 0.05 was the significance limit used in pilot test of this research. After ANOVA test, the next step was conducting the mean treatment by employing the descriptive statistic test. Then, we conducted hypothesis interaction test by using post hoc with Bonferroni model to determine the effect of independent variable to dependent variable.

4. Result and Discussion

T-test Based on Its Gender

T-test based on its gender was used to test the equality or to know whether there were some differences or not based on its gender among the four groups or treatment combination. Furthermore, the result of t-test could be performed on Table 1.

Information	Levene's Test for Equality of Variances		T test for Equality of Means						
	F	Sig	t	df	Sig (2-tailed)	Mean Diff	Std Error Diff	95% Confidence Interval	
								Lower	Upper
RiskT-1-EqualVariance Assumed	.16	.71	1.88	4	.13	.24	.13	-.11	.58
RiskT-2Equal Variance Assumed	.81	.42	-.1	4	.93	-.01	.07	- .19	.18
RiskT-3-Equal Variance Assumed	17.13	.03	-.62	4	.58	-.10	0.16	-.62	.42
RiskT-4Equal Variance Assumed	.69	.47	1.34	4	.27	.75	.56	-1.03	2.52

Table 1. The t-test based on its Gender
Source: data processed

Table 1 above showed that the homogeneity by employing the Levene's test from treatment group 1, 2 and 4 excluded treatment group 3 showed its significance with p-value > 0.05 of significant limit. This in general might cause the homogeneity of participants. The t-test of treatment group 1 up to treatment group 4 showed the significant value with p-value > 0.05 of significant limit. This result showed that there was equality or no difference between boy and girl participants. The highest standard error of treatment group 4 was 55,8%. Meanwhile, the treatment group 1,2 and 3 was still below 17%. This meant that the homogeneity based on gender had already fulfilled the requirement and criteria of laboratory experiment research.

ANOVA Test

The variant analysis test of ANOVA in pilot test was conducted to determine whether there was a risk taking difference between those treatment groups or not. Furthermore, the variant test result of ANOVA could be seen in Table 2 below:

Risk Taking	Sum of Squares	df	Mean Square	F	Sig
Between Group	4.934	3	1.645	14.081	.000
Within Group	2.102	18	.117		
Total	7.036	21			

Table 2. Risk Taking ANOVA Variant Analysis
Source: data processed

Table 2 above showed that the result of ANOVA with total df 21 consisted of between group with df = 3 and within group with df = 18. Based on the variant analysis of ANOVA, it could be found that F value was 14.081 with its significance of 0.000 smaller/lower than its significant limit used in pilot test, that was 0.05. This result could be concluded that there was a difference of risk taking among the four treatment groups. Therefore, this had already fulfilled some requirements required to do the following/next test.

Mean Contrast

Mean contrast was undertaken to do testing each hypothesis of the research. Mean contrast consisted of risk taking test that was based on alpha index (Weber and Camerer, 1998) and hypothesis interaction test. This alpha index showed the level of risk taking of each participant group, that was gain and loss group. Furthermore, this interaction test showed whether or not there was a significant effect of each hypothesis. Meanwhile, the result of mean contrast of this research was presented in Table 3 below:

Mean contrast	Hypothesis	Risk Taking	Mean diff	Std Error	Sig
Gain Vs Loss	H1	.072 Vs -.586	.560	.207	.087
PositiveInf Vs negativeInf	H2	.0389 Vs -.877	1.155	.207	.000
Gain_PositiveInf Vs Loss_NegativeInf	H3	.055 Vs -1.099	1.155	.207	.000

Table 3. Mean contrast Interaction of Loss Aversion, Information and Risk Taking
Source: data processed

The test result of hypothesis 1 based on alpha index of gain group with gain manipulation showed a positive score, that was .0721. This score was considered to have the low risk taking. Meanwhile, the loss group with loss manipulation showed a negative score, that was -.586. This score was considered to have a high risk taking. Furthermore, the result of post hoc with Bonferroni model of hypothesis 1 showed that the loss aversion both its gain and loss domains did not have any effect on its risk taking because its significance of 0.087 > 0.05 was a significant limit of this research.

Furthermore, the test result of hypothesis alpha index 2 of gain group with positive information manipulation showed a positive score, that was .0389 and this score was classified to have a low risk taking. Meanwhile, the loss group with loss manipulation showed a negative score, that was -.586 and this score was classified to have a high risk taking. Furthermore, the result of post hoc with Bonferroni model of hypothesis 1 showed that the loss aversion both in gain and loss domain did not have any effect on risk taking because its significance of 0.087 > 0.05 was a significant limit of the research.

The test result of hypothesis alpha index 2 to gain group with positive information manipulation showed that the positive score of .0389 was classified as a low risk taking. Meanwhile, the loss group with negative information manipulation showed that the negative alpha index of -.877 was classified as a high risk taking. Furthermore, the test result of hypothesis alpha index 3 to gain group with gain manipulation and positive information showed that the positive score of .055 was classified as a low risk taking. Meanwhile, the test result of hypothesis alpha index 3 to loss group with loss manipulation and negative information showed that the negative score of -1.099 was classified as a high risk taking. The result of post hoc with Bonferroni model to hypothesis 2 and 3 both to gain group and loss one had a significant effect to the risk taking with its significance of 0.000 < 0.05 as its significant limit used in pilot test of this research.

The test result of hypothesis 1, 2 and 3 based on the result of alpha index above supported the prospect theory stated by (Kahneman and Tversky, 2013) (Kahneman, 1979). This theory stated that an investor in gain domain tended to have low risk taking but when it was in loss domain, it tended to have high risk taking.

Based on table 3 above, it could be explained that the level of risk taking from hypothesis 1 showed that when an investor was in gain domain with the manipulation of stock price which tended to increase, the risk taking would tend to be low. This low risk taking could be seen from its positive alpha index. On the other hand, when an investor was in loss domain with the manipulation of stock price which tended to decrease, the risk taking would tend to be high. This high risk taking could be seen from its negative alpha index. As it was stated by (Thaler *et al.*, 1997) that a person/someone would tend to be more sensitive to something decrease than the increase of his wealth or riches. Furthermore, this research result also supported the other researches conducted by (Neale *et al.*, 1986);(Seo, Goldfarb and Barrett, 2010); (Kahneman, Knetsch and Thaler, 1990).

Moreover, (Kahneman and Tversky, 2013); (Kahneman, 1979) said that risk averse at gain domain, it would remove to be risk seeking choice. This result was appropriate with the prospect theory as it was explained in 'A Hypothetical Value stated by (Kahneman, 1979) (Kahneman and Tversky, 2013). Meanwhile (Neale *et al.*, 1986) also said that when an investor was in gain domain position, he would tend to avoid the risk. Furthermore, (Seo, Goldfarb and Barrett, 2010), their research result showed that when an investor was in a loss domain, he would tend to have a courage to take a risk or high risk taking. This result also supported the research result conducted by (Kahneman, Knetsch and Thaler, 1990). However, this research result was not supported with the hypothesis interaction test showing that at loss aversion manipulated with gain or loss domain in fact did not have significant effect to the risk taking. This showed that in decision making a participant was not only influenced by the gain or loss but also some other factors out of this condition, such as psychological aspect. Furthermore, the result of hypothesis test and interaction test of this research did not support the research result conducted by (Kahneman and Tversky, 2013); (Kahneman, 1979); (Neale *et al.*, 1986); (Seo, Goldfarb and Barrett, 2010).

The level of risk taking from hypothesis 2 showed that during the treatment when it was provided with manipulation and positive information showed that investor tended to have low risk taking. Moreover, the low risk taking was shown from the positive alpha index. On the other hand, when it was manipulated with negative information, investor would tend to have high risk taking. This high risk taking could be seen from the negative alpha index. This had already been appropriate with the theory of hypothetical value stated by (Kahneman and Tversky, 1979). They said that at the gain or positive position, investor would tend to have low risk taking rather than he was provided with negative information or un delightful / unexciting information. The result of alpha index was supported with the test result of hypothetical interaction where both positive and negative information had a significant effect to the risk taking. Furthermore, (Huangfu and Zhu, 2014) in his research said that negative information would influence the participant to make his decision longer. Meanwhile, the research result conducted by

(Huangfu and Zhu, 2014) supported the research conducted by (Dunegan, 1993) stated that the participant obtaining the information in the form of negative framing would show his analytical tendency. Therefore, he would tend to consider with more rational thought before doing something. Moreover, the research result conducted by (Mishra, Gregson and Lalumiere, 2012) showed that negative framing tended to have risk seeking rather than positive one. Those three statements showed that negative information could influence someone to keep holding his stock longer because he was afraid of getting loss and expecting to wait a positive information that would provide him some gain or profit.

The level of risk taking from hypothesis 3 showed that when the treatment was manipulated with gain domain (the stock price tended to increase and positive information), it was found that investor tended to have low risk taking. The low risk taking could be seen from its positive alpha index. On the other hand, when the treatment was manipulated with loss domain (the stock price tended to decrease and negative information), it was found that investor tended to have high risk taking. The high risk taking could be seen from its negative alpha index. This result finding was appropriate with the theory of a hypothetical value stated by (Kahneman, 1979). This theory said that the position which tended to be positive, it would tend to have low risk taking rather than in a negative position. This alpha index was supported with the test result of hypothetical interaction because although the treatment was either in a gain condition and was provided with positive information or in a loss condition and was provided with negative information, had a significant effect to the level of risk taking. This theory in fact supported the research result conducted by (Dunegan, 1993); (Kaufmann and Weber, 2013); (Huangfu and Zhu, 2014).

5. Conclusion

Based on the research result, it could be concluded that in line with loss or negative information, it would have a significant effect to the risk Based on the research result, it could be concluded that in line with the risk taking decision in investment, it could be explained in loss aversion and information. In general, Risk Taking was affected by loss aversion and information. Loss Aversion during manipulation with gain or loss did not have an effect to risk taking. However, participants in gain condition tended to have low risk taking rather than in loss condition. Both positive and negative information had an effect to the risk taking.

Participants in positive information condition tended to have lower risk taking or risk averse rather than participants being provided with negative information who had a tendency of high risk taking or risk seeking. When loss aversion manipulated with gain and information manipulated with either positive information or manipulated taking. Participants who were in gain position and positive information would tend to have low risk taking (risk averse). On the other hand, participants manipulated with loss and negative information would tend to have high risk taking (risk seeking).

6. Limitation and Future Research

The pilot test limitation of this research was dealing with the total number of participants. There were only 11 (eleven) students of S.1 program of management majoring in finance. This experiment was conducted in the day time (in the afternoon) so that there was some maturation effect due to the tiredness from their prior activities that had to be done in the morning.

In the future, the research on the risk taking is expected to be capable of involving some other psychological aspect especially dealing with emotion aspect as a treatment variable besides loss aversion and information. This might make us know the level of somebody's emotion that might affect the courage level of investment risk taking.

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Public Service Motivation, Work Attitudes, and Job Performance: An Empirical Study

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Abstract

This study aimed to analyze the effect of public service motivation and work attitudes on job performance. This study was conducted by using the second order of confirmatory factor analysis (CFA) and structural equation modeling (SEM) with total samples of 181 respondents from 6 technical implementation unit (UPT) of the Indonesian agricultural quarantine agency. The results proved that public service motivation and work attitudes have a positive effect on job performance.

Keywords: *public service motivation; job satisfaction; organizational commitment; job performance.*

1. Introduction

Job performance (JP) is defined as the realization of tasks assigned to employees based on their qualifications (Kalkavan and Katrinli, 2014). Performance of employees can provide an overview of results from the implementation of duties and responsibilities because it relates to the quality, quantity, and creativity of employees in carrying out their duties. And also it shows how the establishment of cooperation among colleagues so that all work can be completed quickly and on time. Thereby, employees contribution can be assessed from the performance of employees in achieving organizational goals.

According to Rainey (1982), public service motivation encourages public employees to put the priority on performing public service tasks that have meaning and benefits for others. Employees with high public service motivation perceive their work as important and have benefits for others to cover the shortcomings of the minimal rewards they receive as public employees. Therefore employees will work harder, provide the best outcome from their duties and responsibilities, and felt satisfied with the work they do (Wright and Pandey, 2008). However, the research conducted by Alonso and Lewis (2001), Petrovsky and Ritz (2014), and Vandenabeele (2009) found different results.

Some studies also link job performance with work attitudes such as job satisfaction and organizational commitment. The satisfaction of employees is driven from the things given by the work is considered valuable. When employees are satisfied with their work, it will generate positive feelings in the work and produce better performance (Hsieh, 2016). According to Vandenabeele (2009), employees who have positive emotions, such as feeling satisfied, will able to produce the better performance that leads to high outcomes. However, the research conducted by Kalkavan and Katrinli (2014) and Fu and Deshpande (2014) found different results.

Employees commitment to the organization will encourage high performance because it is driven by a desire to strive organizational goals to be achieved and a desire to remain a part of the organization (Ferris, 1981). According to Beer (2009), an employee who maintains the feeling of "loving work in the organization" is believed to be able to create psychological harmony with the organization through the existence of emotional tendencies or attachments. Employees will be more motivated because they are psychologically in line with the mission and organization values (Pinho et al., 2014). However, the research conducted by Gibbs and Ashill (2013) found a different result.

The Indonesian Agricultural Quarantine Agency is one of the Indonesian government organizations under the Ministry of Agriculture. The main tasks and functions are to prevent the entry, the spreading, and the release of Animal Quarantine Pests (Hama Penyakit Hewan Karantina – HPHK) and Plant Quarantine Pests (Organisme Pengganggu Tumbuhan Karantina – OPTK) from other countries into the territory of the Republic of Indonesia, from one area to others within the territory of the Republic of Indonesia, and from the territory of the Republic of Indonesia to other countries (Badan Karantina Pertanian, 2016).

The Indonesian Agricultural Quarantine Agency also performs the public service function, especially in the Technical Implementation Unit (Unit Pelaksana Teknis – UPT) which is spread throughout Indonesian territory. As an effort to improve the quality of public services, it is necessary to measure using the Public Satisfaction Index (Indek Kepuasan Masyarakat – IKM) in knowing the level of quality of public services conducted by the organization. The results of the Public Satisfaction Index (IKM) during the second semester of 2015 and the first semester of 2016 in six Technical Implementation Unit (UPT) of the Indonesian Agricultural Quarantine Agency shows that there have been a decrease and stagnation in the score of public services elements (Badan Karantina Pertanian, 2017). Assessment of public services elements shows the performance level in carrying out public service tasks that have been carried out by civil servants (Pegawai Negeri Sipil – PNS) of the Indonesian Agricultural Quarantine Agency in six Technical Implementation Unit (UPT) based on public opinion.

There are still few studies that have been discussed related to public service motivation, work attitudes, and job performance in Asian countries and also between work attitudes to job performance (Cheng, 2015). Based on the above arguments and the previous research findings that are contradicted and also the decreases and the stagnation score of public service elements based on the Public Satisfaction Index (IKM) in six

Technical Implementation Unit (UPT) of the Indonesian Agricultural Quarantine Agency, therefore this research aims to find out the effect of public service motivation, job satisfaction and organizational commitment on job performance in six Technical Implementation Unit (UPT) of the Indonesian Agricultural Quarantine Agency and also the effect of public service motivation on job satisfaction and organizational commitment of employees in six Technical Implementation Unit (UPT) of the Indonesian Agricultural Quarantine Agency.

2. Review of Literature and Hypotheses Development

2.1. The Relationship between Public Service Motivation and Job Performance

According to Vandenabelle (2007), public service motivation (PSM) is defined as an action that encourages individuals based on the values and attitudes they believe in to contribute and benefit the interests of the society (Vandenabeele, 2009).

Research conducted by Naff and Crum (1999) found that PSM had a positive effect on JP on federal employees in America. Van Loon et al. (2016) found that there was a positive relationship between PSM and JP on employees in 42 organizations in the Netherlands. Research conducted by Ritz (2009) found that PSM had a positive effect on JP on federal administrative staff in Switzerland. Vandenabeele (2009) found that there was a positive relationship between PSM and JP except for the dimension of compassion on civil servants in Belgium.

However, the results of a study conducted by Petrovsky and Ritz (2014) on federal employees in Switzerland found that there was no relationship between PSM and JP. Research conducted by Alonso and Lewis (2001) also found similar results for federal employees in America.

H1: *Public service motivation (PSM) has a positive effect on job performance (JP).*

2.2. The Relationship between Public Service Motivation and Job Satisfaction

According to Iverson and Maguire (2000), job satisfaction (JS) is defined as the general attitude shown by employees regarding their work as well as positive or negative judgments on matters concerning their work environment (Kalkavan and Katrinli, 2014).

Research conducted by Stazyk (2012) on local government officials in America found that PSM had a positive effect on JS which was supported by the existence of various salary systems. Liu and Perry (2014) found that there was a positive relationship between PSM and JS on public employees from district A in the metropolitan city in eastern China. Research conducted by Naff and Crum (1999) on federal employees in America found that PSM had a positive effect on JS. Cun (2012) found that there was a positive relationship between PSM and JS in city government employees in Guangzhou. Similar results were found in a study conducted by Homberg et al. (2015), Kim (2012, 2017), Kjeldsen and Andersen (2012), Palma and Sepe (2017), Park and Rainey (2008), Taylor (2008, 2013), Taylor and Westover (2011), and Tet et al. (2016).

However, research conducted by Bright (2008) on state health officials in the states of Indiana, Kentucky, and Oregon found that there was no relationship between PSM and JS. Wright and Pandey (2008) found that there was no direct relationship between PSM and JS but it was mediated by values held by employees in government organizations in northeastern of America. Research conducted by Qi and Wang (2016) on state employees from 21 provinces in China also found that there was no direct relationship between PSM and JS. The same results were also obtained from research conducted by Carr (2015) and Andersen and Kjeldsen (2013).

H2: *Public service motivation (PSM) has a positive effect on job satisfaction (JS).*

2.3. The Relationship between Public Service Motivation and Organizational Commitment

According to Çöl (2004), organizational commitment (OC) is defined as self-identification of employees to their organizations, acceptance of organizational principles, goals, and values, the exertion of efforts for the benefit of the organization and willingness to continue working for the organization (Kalkavan and Katrinli, 2014).

Research conducted by Im et al. (2013) on government employees in Korea found that PSM had a positive effect on OC. Ritz (2009) found that there was a positive relationship between PSM and OC in federal administrative staff in Switzerland. Research conducted by Castaing (2006) found that PSM had a positive effect on OC on civil servants in the south of France. Qi and Wang (2016) found that there was a positive relationship between PSM and OC on public servants from 21 provinces in China. Research conducted by Caillier (2016), Crewson (1997), Kim (2011, 2012, 2017), and Taylor (2008) also found similar results.

However, the results of a study conducted by Camilleri (2006) on government officials in Malta found that OC had a strong effect on PSM. Research conducted by Kim et al. (2015) on government employees in South Korea also found results that OC had an effect on PSM. The same results were also obtained from research conducted by Camilleri and Van Der Heijden (2014).

H3: *Public service motivation (PSM) has a positive effect on organizational commitment (OC).*

2.4. The Relationship between Job Satisfaction and Job Performance

Research conducted by Ritz (2009) found that job satisfaction (JS) had a positive effect on job performance (JP) on federal administrative staff in Switzerland. Hsieh (2016) found that there was a positive relationship between JS and JP on employees in Taiwan and JS had a stronger influence. Research conducted by Gibbs and Ashill (2013) found that JS had a positive effect on JP on front-line employees in the 6 largest commercial banks in Russia. Yousef (1998) found that there was a positive relationship between JS and JP on employees who worked in various organizations in the United Arab Emirates (UAE). Research conducted by Edwards et al. (2008), Park and Rainey (2008), and Petty et al. (1984) also found similar results.

However, research conducted by Kalkavan and Katrinli (2014) on insurance employees in Turkey found results that there was no relationship between JS and JP. The same results were also obtained from research conducted by Fu and Deshpande (2014).

H4: *Job satisfaction (JS) has a positive effect on job performance (JP).*

2.5. The Relationship between Organizational Commitment and Job Performance

Research conducted by Ritz (2009) found that organizational commitment (OC) has a positive effect on job performance (JP) on federal administrative staff in Switzerland. Kalkavan and Katrinli (2014) found that there was a positive relationship between OC and JP on insurance employees in Turkey. Research conducted by Suliman and Kathairi (2012) found that OC had a positive influence on JP on employees in 3 leading organizations in Abu Dhabi. Research conducted by Akbar, Udin, Wahyudi, and Djastuti (2018), Camilleri and Van Der Heijden (2007), Fu and Deshpande (2014), and Udin, Handayani, Yuniawan, and Rahardja (2017) also found similar

results. Research conducted by Jaramillo et al. (2005) using a meta-analysis investigation found that there was a positive relationship between OC and JP. Similar results were also obtained from research conducted by Riketta (2002), and also by Meyer et al. (2002) except for continuance commitment.

However, the results of a study conducted by Gibbs and Ashill (2013) on front-line employees in the 6 largest commercial banks in Russia found that there was no relationship between OC and JP.

H5: *Organizational Commitment (OC) has a positive effect on job performance (JP).*

Figure 1. Theoretical Framework

3. Materials and Methods

This research is an applied research that aims to test the hypothesis. Causal studies are the type of investigation used in this study with minimal interference. The setting in this study is non-contrived and the time horizon used in this study is a cross-sectional study with the unit of analysis are individuals. The data in this study comes from the primary data derived from questionnaire and secondary data in the form of an organization profile. The sampling design in this study is probability sampling with simple random sampling. The type of scale used in this study is the interval scale with the scale method is the rating scale using seven points Likert scale. This research was conducted by using the second order of confirmatory factor analysis (CFA) and structural equation model (SEM).

The population used in this study was 471 respondents from all civil servants (PNS) in 6 Technical Implementation Unit (UPT) of the Indonesian Agricultural Quarantine Agency consisting of Balai Besar Karantina Pertanian Belawan (representing the island of Sumatera), Balai Karantina Pertanian Kelas I Semarang (representing the island of Java), Balai Karantina Pertanian Kelas I Mataram (representing the islands of Bali, West Nusa Tenggara, and East Nusa Tenggara), Balai Karantina Pertanian Kelas I Jayapura (representing the islands of Papua and Maluku), Balai Karantina Pertanian Kelas II Tarakan (representing the island of Kalimantan), and Balai Karantina Pertanian Kelas II Gorontalo (representing the island of Sulawesi).

The number of samples used in this study was 213 civil servants (PNS) based on the sample size of the population (Krejcie and Morgan, 1970). The sample size is proportionally distributed to the 6 Technical Implementation Units (UPT) of the Indonesian Agricultural Quarantine Agency and only 181 samples are complete and can be used in this study.

PSM was measured using a scale developed by Kim (2008), JS was measured using a scale developed by Vitell and Davis (1990), OC was measured using a scale developed by Meyer and Allen (2004), and JP was measured using a scale developed by Koopmans et al. (2016).

4. Data Analysis and Discussion

Confirmatory factor analysis (CFA) was used in testing the multidimensionality of a theoretical construct. The use of this analysis was also to test the validity of a theoretical construct with several indicators. So it can be seen whether the indicator of the latent construct was a unidimensionality measure (Ghozali, 2017). The second order of CFA on PSM, JS, OC, and JP construct were being tested and the result was considered fit and acceptable based on cutoff values for goodness of fit (Hair Jr. et al., 2014).

The structural equation model on a full model of PSM, JS, OC, and JP constructs was tested after performing second order of CFA and the result was considered fit based on the value of CMIN/DF of 1.973 and RMSEA of 0.074. Based on the criteria of validity and reliability (Hair Jr. et al., 2014), the result shows that the results for convergent validity and construct reliability on PSM, JS, OC, and JP construct were acceptable. The results for variance extracted were also acceptable, except for the dimension of 'compassion', 'self-sacrifice', 'satisfaction with pay', 'continuance commitment', and 'normative commitment'.

The use of latent variables with many indicators on the structural equation model theoretically is good because it will be able to explain better the measurement error in the model. However, it becomes very complicated in empirical evaluation and model specifications whereas the number of samples is not sufficient to estimate the complex model. To overcome this, one way is to estimate the structural equation model using a composite indicator (Ghozali, 2017).

The structural equation model on a full model of PSM, JS, OC, and JP constructs by using composite indicator was tested and the result was considered moderate based on the value of GFI of 0.835 and CMIN/DF of 2.658. These result can still be accepted following the complexity of the model whereas the number of samples is not sufficient (Owili et al., 2015; Seyal et al., 2002; Sharma et al., 2005). The goodness of fit results for the second order of CFA, the full model, and the composite full model of PSM, JS, OC, and JP constructs can be seen completely in Table 1 and Figure 2.

The tests show that the results for convergent validity on PSM, JS, OC, and JP construct were acceptable. The results for variance extracted and construct reliability were also acceptable, except for the dimension of 'compassion' and 'self-sacrifice'. The results of reliability tests that do not meet the condition of cutoff values can be due to the respondents who answered correctly and honestly, but there were an overstate or understate answers resulting measurement errors from the answers (Ghozali, 2017). The results of the effects of PSM, JS, OC, and JP can be seen in Table 2.

Goodness of Fit	Second Order CFA PSM	Second Order CFA JS	Second Order CFA OC	Second Order CFA JP	Full Model	Full Model Composite
χ2	88.209	98.671	86.354	112.640	1918.078	231.226
df	40	40	42	63	972	87
CMIN/DF	2.205	2.467	2.056	1.788	1.973	2.658
p	0.000	0.000	0.000	0.000	0.000	0.000
GFI	0.921	0.915	0.923	0.919	0.699	0.835
AGFI	0.870	0.860	0.879	0.883	0.665	0.772
TLI	0.906	0.884	0.913	0.953	0.759	0.629
CFI	0.932	0.916	0.933	0.962	0.773	0.692
NFI	0.884	0.868	0.880	0.918	0.632	0.597
RMSEA	0.082	0.090	0.077	0.066	0.074	0.104

Table 1. Goodness of Fit for Second Order CFA and Full Model

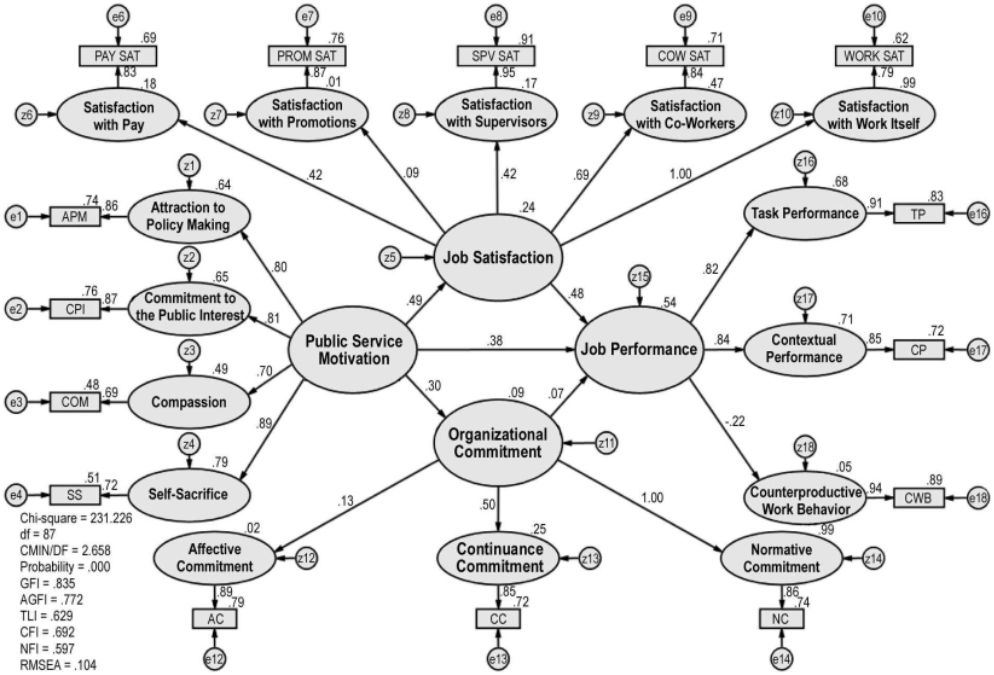

Figure 2. Full Model

	Standardized Estimate	Estimate	S.E.	C.R.	P
Job Satisfaction ← Public Service Motivation	0.486	0.556	0.146	3.799	***
Organizational Commitment ← Public Service Motivation	0.303	0.318	0.120	2.649	0.008
Job Performance ← Public Service Motivation	0.382	0.564	0.206	2.734	0.006
Job Performance ← Organizational Commitment	-0.067	-0.094	0.154	-0.612	0.541
Job Performance ← Job Satisfaction	0.485	0.625	0.201	3.113	0.002

Table 2. Hypotheses Testing

The results of this study confirm a positive and significant relationship between PSM and JP with a standardized coefficient value of 0.382 which is significant at a p-value of 0.006 and thereby the first hypothesis (H1) was acceptable. The direct effect between PSM and JP was 0.382 and the indirect effect was 0.215 whereas the total effect was 0.597. The dimension that has the weakest value is 'compassion' with a standardized coefficient of 0.700. JS was positively mediated between PSM and JP while OC was negatively mediated between PSM and JP. PSM was able to motivate civil servants (PNS) in 6 Technical Implementation Unit (UPT) of the Indonesian Agricultural Quarantine Agency to produce a higher and better JP. The reason is that it was driven by the desire to serve and make benefit the wider community so that all efforts of their quality in carrying out agricultural quarantine services will be done for the fulfillment of the needs of the community and disregard for their personal interests. According to van Loon et al. (2016), employees with high PSM will be more concerned with work in serving the community than personal interests and will exert greater efforts to achieve success at the work.

The results of this study confirm a positive and significant relationship between PSM and JS with a standardized coefficient value of 0.486 which is significant at p-value *** or 0.001 and thereby the second hypothesis (H2) was acceptable. The direct effect and the total effect between PSM and JS was 0.486. The dimension that has the weakest value was 'compassion' with a standardized coefficient of 0.700. PSM was able to increase JS of civil servants (PNS) in 6 Technical Implementation Unit (UPT) of the Indonesian Agricultural Quarantine Agency significantly. The reason is that PSM was able to make employees see the importance of their work through agricultural quarantine services which have a positive and beneficial impact on the society and the community. JS could also increase because the institution was able to provide opportunities for employees to fulfill their social desires directly to the community through implementing the services of the Indonesian Agricultural Quarantine Agency. According to Wright and Pandey (2008), employees with high PSM will be satisfied with the opportunity in their work to provide services to the community and thereby will directly produce the best outcome.

The results of this study confirm a positive and significant relationship between PSM and OC with a standardized coefficient value of 0.303 which is significant at p-value 0.008 and thereby the third hypothesis (H3) was acceptable. The direct effect and the total effect between PSM and OC was 0.303. The dimension that has the weakest value was 'compassion' with a standardized coefficient of 0.700. PSM was able to increase OC of civil servants (PNS) in 6 Technical Implementation Unit (UPT) of the Indonesian Agricultural Quarantine Agency significantly. The reason is that employees who work in the Indonesian Agricultural Quarantine Agency had the same value as the organization. One of them is the agricultural quarantine services which are the main task and the main function of the organization to meet the needs and interests of society. PSM was able to support the values applied within the organization in accordance with the values believed by employees and thereby directly increase employees commitment to the organization. According to Im et al. (2013), employees with high PSM have the desire to serve the needs and interests of the community, and when the organization provides opportunities and support for those desires it can directly reinforce their identification of the organization.

The results of this study confirm a positive and significant relationship between JS and JP with a standardized coefficient value of 0.485 which is significant at p-value 0.002 and thereby the fourth hypothesis (H4) was acceptable. The direct effect and the total effect between JS and JP was 0.485. The dimension that has the weakest value was 'satisfaction with promotion' with a standardized coefficient of 0.093. JP of civil servants (PNS) in 6 Technical Implementation Unit (UPT) of the Indonesian Agricultural Quarantine Agency can increase along with the increase in JS employees. The reason is that conducting agricultural quarantine services to the community was able to make the employees feel satisfied, thereby will produce the maximum quality of work of each employee in the organization in accordance with the role of duties and responsibilities respectively. According to Hsieh (2016), if work can fulfill the needs of employees then it can create a sense of satisfaction with their work and directly encourage employees to work better.

The results of this study confirm a negative and insignificant relationship between OC and JP with a standardized coefficient value of -0.067 which is significant at p-value 0.541 and thereby the fifth hypothesis (H5) is rejected. The direct and the total effect between OC and JP was -0.067. The dimension that has the strongest value was 'normative commitment' with a standardized coefficient of 0.997. According to Gibbs and Ashill (2013), the negative and insignificant effects of OC and JP can be explained by the fact that employees also have various roles or tasks than their main tasks. Moreover, it can also be associated with the culture of certain countries and organizations. According to Hofstede (1987), employees derived from collective cultures see the relationship between employees and their organization as family type relationship in which the necessity for mutual care and loyalty among group members is preferred (Gibbs and Ashill, 2013). With the strength of collective culture (kinship) as a form of community, there is no desire of individuals to develop themselves because it can damage the system of togetherness and status within the group. This will certainly affect the lack of desire to improve quality and performance results. Moreover, Hofstede (1987) also states that there are several cultural assumptions found in Southeast Asian societies including Indonesia, which state that they are not goals to be achieved in work and the need to achieve peace and harmony with the environment. This will certainly affect the lack of effort to achieve the best outcome in work and more focus on comfort.

5. Conclusions and Suggestions

PSM was proven to have statistically significant and positive effect on JP, JS, and OC. Suggestions that can be given related to PSM so that it is expected to directly increase JP, JS, and OC are as follows: (a) raising awareness and empathy of employees to society, as well as promoting patriotism by giving priority to serve the public interest rather than personal interests; (b) increasing employee involvement to be more active in public policy making and also raising awareness of the importance of employee participation in public policymaking that could benefit the society; (c) enhancing employees commitment to serve the public interest properly and maximally and fostering the importance and meaning of their actions to the community and others; and (d) cultivate employee character to be ready to sacrifice for society and also work with enthusiasm to make changes for a better society.

The results of this study confirm a positive and significant relationship between JS and JP. Suggestions that can be given related to JS so that it is expected to directly increase JP are as follows: (a) enhancing employees understanding and assure them that policies for promotion and implementation within the organization are run well, fairly, transparently, and based on applicable competencies and regulations; (b) improve communication, guidance, and supervision between leaders and subordinates and also openly accept good and constructive suggestions and opinions from subordinates; (c) increasing the certainty of employees rights for salary payments and other incentives and also maximizing efforts from the leaders to improve employee welfare; (d) fostering strong relationship between employees and co-workers in order to promote good cooperation so that their work can be done properly and on time; and (e) fostering employees understanding the importance of their tasks and job/work.

OC was proven to have statistically insignificant and negative effect on JP. Suggestions that can be given related to OC so that it is expected to directly increase JP are as follows: (a) increasing professionalism by eliminating the feelings of obligation to the organization as an excuse to remain within the organization; (b) increasing professionalism by eliminating feelings of comfort as an excuse to remain within the organization; and (c) increasing professionalism by eliminating the emotional ties to the organization as an excuse to remain within the organization.

This research has the following limitations: (1) the complexity of the model requires the use of composite indicators; (2) there are many outliers and not normally distributed data; (3) the value of AGFI, TLI, CFI, NFI, and RMSEA are below the cutoff value for goodness of fit; (4) the variance extracted (AVE) for the dimension of 'compassion' is below the cutoff value; and (5) the construct reliability (CR) for the dimension of 'compassion' and 'self-sacrifice' below the cutoff value. Therefore, this study needs to be tested for future studies in different collective cultures of organizations and countries.

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Evaluating Efficiency of Russian Regional Environmental Management Systems

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Abstract

The purpose of this work is to develop an approach to assess the effectiveness of the environmental management systems of the regions of the Russian Federation. The effectiveness of EMS in this study is proposed to be understood in a purely economic sense: as the ratio of the indicator characterizing the improvement of the environmental aspects of the region's economy to the costs incurred to achieve this improvement over a period of time. The study contributes to the literature in several areas: 1) an approach has been proposed for defining a regional environmental management system as an aggregate of regional institutions that manage budgetary and extrabudgetary funds for environmental protection; 2) a method was proposed for evaluating the effectiveness of regional EMS based on the use of DEA models with negative outputs; 3) an evaluation of the effectiveness of the EMS regions of the European part of Russia was carried out, effective and inefficient regions were identified, the amounts of funds spent inefficiently were determined; 4) the hypothesis was verified that the size of the region's economy (assessed by GRP volume and population size) affects the efficiency of the EMS, and this effect is negative.

Keywords: *regional environmental management systems; comparative eco-efficiency; data envelopment analysis; eco-innovations; circular economy.*

1. Introduction

Modern academic literature on sustainable development assigns the most important role in managing the environmental aspects of economic activities of economic agents to local authorities (Brugmann, 1996). This is due to two main reasons: on the one hand, any negative effects of any economic activity (both production processes and life support processes of the population) are most likely felt at the local level and directly affect the quality of life of people. On the other hand, local authorities have the opportunity to influence people through the formation of environmentally friendly patterns of consumer behavior, sustainable urban planning and land use, information campaigns and educational activities, etc. (Petrosillo et al., 2012).

In the Russian Federation, the basic rules and regulations governing the environmental impact of the economy are established at the federal level, however, the regional authorities play a significant role in carrying out a number of local environmental management functions. Thus, the function of state environmental monitoring and supervision in the field of air protection and waste management is distributed between Federal Service for Supervision of Consumer Rights Protection and Human Well-Being (Rosprirodnadzor) and regional authorities. The functions of state monitoring of the radiation situation, wildlife objects, and the quality of forests are also distributed between federal and regional authorities. All statistical information on the quality of the environment and on financing environmental protection measures is provided to the population in a regional context. All funds collected from economic agents as payment for a negative impact on the environment and as environmental fines for violating the norms of environmental impact are further distributed as follows: 5% of the collected funds go to the federal budget; 40% to the regional budgets and 55% to the budgets of municipalities and urban districts. The function of allocating budget funds for environmental protection and planning measures to improve the ecological status of the region is fully assigned to the regional ministries of ecology and environmental protection.

At the same time, there is no standardized approach to the organization of an environmental management system (EMS) at the regional level in Russia. Out of the several most common environmental management standards in the world, only ISO 14001 is in force in Russia, which defines the structure and functions of an enterprise EMS, but not a regional one (Ratner and Iosifov, 2017). Attempts to apply the principles of ISO 14001 at the regional level in Russia have not yet been made, including the principle of continuous improvement of EMS. Therefore, no systematic assessment of the effectiveness of the activities carried out in the field of environmental management at the territorial level is currently performed.

The purpose of this work is to develop an approach to assess the effectiveness of the environmental management systems of the regions of the Russian Federation based on statistical data on the quality of the environment and funds received for financing environmental protection measures that are publicly available. The effectiveness of EMS in this study is proposed to be understood in a purely economic sense: as the ratio of the indicator characterizing the improvement of the environmental aspects of the region's economy to the costs incurred to achieve this improvement over a period of time. Since the expenses for environmental protection measures are of two types (current and capital) in Russian regions, and the improvement of the environmental aspects of the regional

economy can be described by a sufficiently large set of statistical indicators (reduction of air emissions, reduction of pollution of natural water bodies, reduction of waste, etc.), then, to calculate a quantitative measure of the effectiveness of EMS, we used an approach based on the use of Data Envelopment Analysis.

The paper is organized as follows: in Section 1 we give a brief literature review on the topic of territorial environmental management systems and their efficiency. Section 2 describes the methodology of research and the choice of input and output indicators for DEA model (2.1) as well as the way of dealing with the negative outputs in DEA model (2.2). In Section 3 we present the results of calculation of efficiency coefficients of regional EMSs in the European part of Russian Federation (as the most populated area) and discuss a possible policy application of proposed methodology and obtained results. The main conclusions are found in Section 4.

2. Efficiency of Regional EMS: Literature Review

The concept of regional EMS is still being debated in the literature. In much of existing literature, regional EMSs are understood as either cooperative EMSs of individual enterprises (Ammenberg and Hjelm, 2003) or EMSs of public authorities (Daddi et al., 2011; Mazzi et al., 2012; Petrosillo et al., 2012; Domingues et al, 2015; Wangel et al., 2016; Bennett, et al., 2016).

One of the first examples of interfirm cooperation for creation and certification of a joint EMS by a group of enterprises can be found in (Ammenberg and Hjelm, 2003). In this example, the initiative to form the EMS and to go through the process of certification according to ISO 14001 came "from the bottom" – from business, while the regional authorities were not any driving force. 26 small and medium enterprises (16 enterprises less than 10 employees, 7 enterprises with the number of employees from 11 to 50 people and three enterprises with the number of employees from 50 to 80 people) in Sweden (Hackefors Industrial District) divided the costs of certification and management and organized joint collection and disposal of waste. As a result of introducing and certifying EMS, relationships with potential business partners (reputation increased) and customers (usually large companies that demonstrate their commitment to their environmental policies through the selection of suppliers certified to ISO 14001) have improved. In addition, by conscientious efforts, the network of enterprises was able to achieve improvements in the local power supply system – a transition was made from boilers heated by oil fuel to a centralized heat supply system, which is more environmentally friendly and energy efficient. Any attempts to quantify the effectiveness of such a network EMS (for example, as the ratio of the total cost of implementing the EMS and the benefits derived from the EMS) have not been made due to the fact that they are difficult to measure and assess.

Examples of introducing and certifying EMS in accordance with ISO 14001 or EMAS standards by local municipalities are more common in the literature (Lozano and Valles, 2007; Mascarenhas et al, 2010; Daddi et al., 2011; Mazzi et al., 2012; Petrosillo et al., 2012; Domingues et al., 2015; Wangel et al., 2016; Bennett, et al., 2016; Mazzi et al., 2017). In the narrow sense of the municipal EMS, it is understood as the EMS of the municipality itself as an organization that produces a certain impact on the environment: it consumes energy and other types of resources, discharges sewage, uses emission-producing vehicles, etc. These types of negative environmental impacts are referred to in the literature as direct environmental aspects. In a broader sense, the environmental aspects of a municipality's activities are understood as the consequences of such activities as urban planning, land use, organization of energy and water supply, etc. The environmental effects of the management activities of the municipal authorities are called indirect environmental aspects. The literature often notes that the indirect environmental aspects of the activities of local authorities are difficult to identify and measure. In addition, the literature emphasizes that the larger the territory managed by local authorities, the more difficult it is for them to monitor and manage indirect environmental aspects (Emilsson and Hjelm, 2005).

Another example of a regional EMS could be the EMS of eco-industrial parks. Many authors define the eco-industrial park as the community of manufacturing and service businesses seeking enhanced environmental and economic performance by collaborating in the management of environmental and reuse issues. By working together, the community of businesses seeks a collective benefit that is greater than the sum of individual

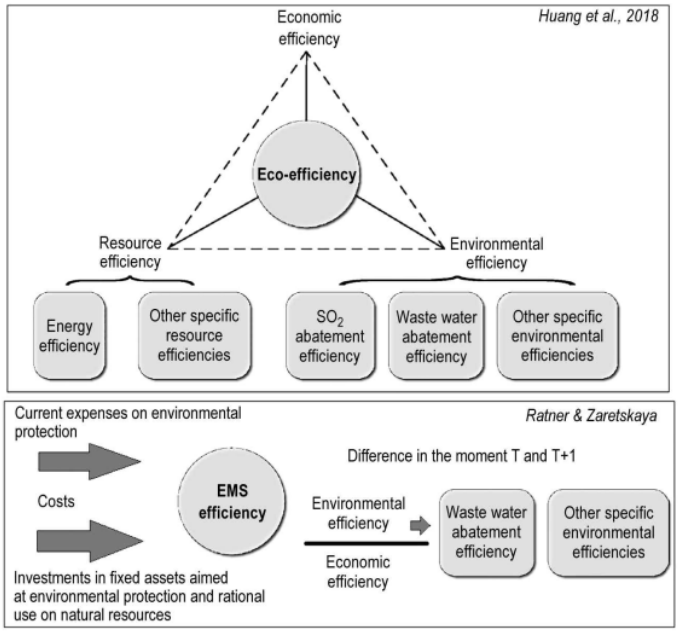

Figure 1.
The difference in assessment of regional eco-efficiency and regional EMS efficiency

benefits each company would obtain if it optimized its individual performance only (Martin, 1996). As a rule, such cooperation, first of all, is aimed at maximizing the use of by-products and therefore reducing the production waste (Daddi et al., 2016). Examples of introducing standards for the certification of a territory as an eco-industrial park (EIP) can be found in the papers (Geng et al., 2009; Geng et al, 2012; Daddi et al., 2016), but we have not identified examples of quantitative evaluation of EMS' efficiency in eco-industrial parks.

Evaluation of various types of efficiency of production systems, including systems of regional scale, with the help of the DEA has become mainstream in the scientific literature in recent years (Bian et al., 2010; Zhang et al., 2013; Wang et al., 2013; Zang et al., 2016; Deng et al., 2016; Gómez-Calvet et al., 2016; Ratner and Ratner, 2017; Huang et al., 2018; Nguyen Hoang et al., 2018). In these studies, environmental efficiency is considered as the ability of a production system to minimize undesirable outputs (negative externalities of production activities) with fixed values of inputs (material and human resources) and desirable outputs (GDP or other economic performance indicator of the production system). In our approach, we also propose using the DEA as a well-proven method, however, assess the effectiveness of environmental management in the region, i.e. management efficiency. Unlike the work (Huang et al., 2018), we consider not just environmental results and economic results as outputs separately, but their ratio as well, which in itself can be an assessment of the environmental efficiency of the production system (fig.1). In addition, following the definition of eco-efficiency proposed by the World Business Council for Sustainable Development (WBCSD, 2000), we consider eco-efficiency as a process of continually reducing negative environmental impacts, i.e. take into account the dynamics of changes in environmental performance.

As inputs of DEA model, we consider, following the traditional approach (Charnes et al., 1981), the cost of creating a result, in this case, an environmental result: differences in the intensity of the environmental impact of regional economy.

3. Methodology and Data

Practical applications of the Data Envelopment Analysis methodology are currently being actively developed, both in foreign and Russian scientific literature, covering all new areas of management and new classes of management tasks (Wang et al., 2017; Ratner and Ratner, 2017; Zhou et al., 2018; Liu et al., 2018). The main features of DEA, which make it an attractive tool for supporting management decision-making, are the following: 1) the ability to assess the performance of economic agents, having minimal knowledge about the production functions and technologies they use only from statistical data on the resources they consume and the volumes of output produced; 2) the opportunity to study various aspects of the functioning of complex systems, varying the choice of outputs and outputs in DEA model; 3) the ability to choose benchmarks for each inefficient economic agent (or system) and optimize their strategy for achieving efficiency; 4) the ability to use well-developed software (including open access software) to calculate the efficiency of the objects under study and make decisions regarding inefficient objects.

At the same time, the basic DEA models implemented in software, as a rule, have some limitations on the type of input and output values (Wang et al., 2017). In particular, in the basic CCR model (with a constant effect of scale) and BCC model (with a variable effect of scale) the inputs and outputs cannot take negative values. In reality, negative output values are possible in the situation when the useful result of the production activity of the economic agent under study (for example, profit or market capitalization), despite the resources spent, is not achieved.

Issues of this kind are often encountered in corporate and regional environmental management: funds spent on environmental protection measures or environmental monitoring and certification do not always achieve the desired goal – reducing emissions of various types of pollutants. In such cases, the difference in emissions of pollutants at the final and initial moments of the EMS implementation may be negative, which does not allow applying the basic DEA models to study the current situation. At the same time, the potential application of these models is significant. As shown in (Ratner and Ratner, 2017; Nguyen et al., 2018; Huang et al., 2018), varying the inputs and outputs by which the environmental management system can be described allows not only to study in detail certain aspects of its work, but also to conclude on the type of development of the economic object as a whole (linear, circular, sustainable), as well as the level of its eco-innovation activity (Jesus et al., 2018).

This paper proposes an approach to overcoming the above-mentioned limitations thanks to the procedures for normalizing and shifting the scale in which the performance indicators of the regional EMS (REMS) are measured.

3.1. DEA-model for regional EMS: inputs and outputs

Let's consider regional environmental management systems of the Central, Southern and North-Western Federal Districts (most populated and developed regions in European part of Russian Federation) as DMUs. We will use two statistical indicators as inputs for these DMUs: 1) current expenditures on environmental measures (in million rubles); 2) the volume of investments in fixed assets aimed at reducing pollution (in million rubles).

According to Federal State Statistic Service (http://www.gks.ru) we acknowledge the following as the current expenses on environmental protection: all expenses on environmental protection and rational use of natural resources, carried out at the expense of own or borrowed funds of an enterprise, or from the state budget. These include the following costs: the maintenance and operation of fixed assets for environmental protection; measures for the preservation and restoration of the quality of the natural environment disturbed as a result of production activities; measures to reduce the harmful effects of industrial activity on the environment; on the treatment of production and consumption wastes; on the organization of control over emissions (discharges), production and consumption wastes into the environment and over the qualitative state of the environmental components; for research work and work on environmental education personnel. It does not include funds paid to other enterprises (organizations) for wastewater reception and treatment, storage and disposal of waste, as well as depreciation deductions accrued to fixed assets for environmental protection.

As investments in fixed assets aimed at environmental protection and rational use of natural resources we consider the expense of all sources of financing both in newly built enterprises and in existing enterprises. These include the cost of construction, reconstruction (including the expansion and modernization) of facilities, which lead to an increase in their initial cost, the purchase of machinery, equipment, vehicles, production and household equipment, accounting of which is carried out in the manner prescribed for the accounting of investments in non-current assets.

As outputs, we consider indicators of a decrease in the level of pollution of the atmosphere and water, i.e. the difference in emissions before investment in fixed capital and the cost of environmental measures and after. In the case of efficient use of financial funds, this difference will be positive, in the case of ineffective – negative or zero.

In order to eliminate the impact on the volume of emissions of such a factor as expansion of production (creation of new production facilities in the region, more complete utilization of

existing production capacity), we will consider the difference in *specific* emission indicators, i.e. indicators of intensity of impact on the environment – emissions into the atmosphere per unit of output (in rubles) and the share of polluted wastewater in the total volume of discharge (in %). Besides, as an additional indicator of water quality, we consider the indicator "the share of water samples that meet quality standards, %". It is obvious that the expenditure of funds to improve this indicator of environmental quality can be considered effective if the value of indicators increases. Then, in contrast to the two previous indicators of outputs of each RSEM, the third indicator of output should be formed as the difference after investment (time $T+1$) and before (time T):

$$\begin{aligned} y_{1,j} &= \Delta_j^{air} = V_{T,j}^{emissions} - V_{T+1,i}^{emissions} \\ y_{2,i} &= \Delta_i^{new} = S_{T,j}^{new} - S_{T+1,i}^{new} \\ y_{3,j} &= \Delta_i^{water\_quality} = S_{T+1,j}^{water\_quality} - S_{T,j}^{water\_quality} \end{aligned} \quad (1)$$

In addition to the three formed outputs, using formulas (1), we will also form indicators of the level of development of the circular economy (Korhonen et al., 2018) in the region as the difference in the intensity of waste generation at the moments T and $T+1$, and the difference in the share (%) of recycled waste at the moments $T+1$ and T:

$$\begin{aligned} y_{4,j} &= \Delta_i^{waste} = V_{T,i}^{waste} - V_{T+1,i}^{waste} \\ y_{5,j} &= \Delta_j^{recycle} = S_{T+1,i}^{recycle} - S_{T,j}^{recycle} \end{aligned} \quad (2)$$

With such a set of inputs and outputs in the basic model of DEA CCR, the solution of the following optimization problem:

$$\max_{u,v} \sum_{m=1}^{M} u_m y_{m0} \quad (3)$$

s.t.

$$\sum_{m=1}^{M} u_m y_{mk} - \sum_{n=1}^{N} v_n x_{nk} \le 0 \quad k = 1,2,\cdots K,$$

$$\sum_{n=1}^{N} v_n x_{n0} = 1,$$

$$u_m, v_n \ge 0 \quad m = 1,2,\ldots M \quad n = 1,2,\ldots N$$

where

0 – index of DMU under consideration; X – vector of inputs, dimension N ($N=2$); Y – vector of output, dimension M ($M=5$); K – number of DMUs

will allow to identify regions that, with a minimum amount of investment in fixed assets, aimed at environmental protection and a minimum amount of current expenditures on environmental protection measures, achieve maximum values of indicators formed in accordance with expressions (1) and (2). Obviously, this can only be achieved if eco-innovations are implemented, including in the area of production systems design that meet the concept of circular economy (maximum product reuse, recycling) (Korhonen et al., 2018).

3.2. Dealing with negative outputs

The values of output indicators for the RSEM of the Central Federal regions, calculated according to the formulas (1) and (2) for the period 2013 - 2014, are presented in Table 1. The values of outputs for the regions of Southern and North-Western Federal Districts are not included due to limited size of the paper.

On the data given in Table 1, it can be seen that with our proposed approach to the formation of inputs and outputs of the CCR model for the RSEM regions of the Central Federal District, a number of outputs have negative values, which indicate that spending on improving the quality of the environment is not efficiently performed everywhere. None of the studied regions has achieved an improvement in the environmental situation in all five indicators included in the consideration. A similar situation is observed for the regions of the North-Western and Southern Federal Districts.

In this case, the identification of more and less efficient regions in the sense of the functioning of the regional EMS through solving CCR optimization problem and the calculation of efficiency scores is impossible due to the presence of the aforementioned problem – negative inputs.

Region	Y_1	Y_2	Y_3	Y_4	Y_5
Belgorodskiy	-0.027	-5.3	1.3	-27.758	1.5
Bryanskiy	-0.008	4.4	-0.8	-0.454	-2.7
Vladimirskiy	-0.044	0.2	3.9	-0.147	0.2
Volonezhskiy	0.007	1.1	-0.7	-0.988	5.1
Ivanovskiy	-0.04	0.1	1.3	0.019	10.8
Kaluzhskyi	-0.031	-0.9	1	-1.794	2.5
Kostronmskoy	-0.03	0.3	-0.6	-2	-6.7
Kurskiy	0.048	-0.7	0	-7.711	1.6
Lipetskiy	0.041	-0.7	-0.1	1.653	-0.5
Moscovskiy	-0.011	-0.4	1.1	-0.714	-69.9
Orlovskiy	0.019	9.4	1.7	-4.634	2.6
Ryazanslyi	-0.018	-0.8	0.8	0.687	3.4
Smolensriy	0.098	1.7	3	0.024	-31.6
Tambovskyi	0.026	0	0.8	-0.955	5.4
Tverskoy	-0.007	1	0.4	-0.667	10.8
Tulskiy	-0.068	0.2	0.8	-0.719	3.3
Yaroslavlskiy	0.007	0	4.9	0.035	-1
Moscow City	0	4.4	0.4	0.068	-16.8

Table 1. The values of the indicators of outputs for the CCR model, formed to assess the level of eco-innovative development of the regions of the Central Federal District for the period 2013-2014

In order to translate negative outputs into positive ones, which allow applying the basic DEA models to determine the level of development of eco-innovation activity in the regions, we will carry out procedures for shifting the scales in which the outputs are measured according to the following formula:

$$z_{i,j} = y_{i,j} + \left|\min y_{i,j}\right| + 0,001 \quad (4)$$

The introduced transformation allows to get rid of the negative values of the outputs, without disturbing the common logic of the formation and solution of DEA model.

4. Results and Discussion

The results of the calculation of the efficiency scores according to the input-oriented CCR model for the regional environmental management systems of all regions of the European part of Russia (Central, North-West and South) are shown in Table 2. In addition, the table shows the target values of the inputs for each region, at which its EMS becomes efficient, as well as the difference between the actual and the required value of each input indicator.

As a result of solving the input-oriented CCR optimization problem the systems of regional environmental management of Ivanovskiy, Orlovskiy, Pskovskiy regions, as well as the Republic of Adygea and the Republic of Kalmykia, are recognized as efficient. In these regions, the minimum investment and current expenditures on environmental protection are used as efficiently as possible, which indicates the introduction of eco-innovation. In this case, product, process and organizational eco-innovations are not separated, although in principle such a division can also be taken into account when solving the DEA task: for this, DEA problem can be divided into two and consider the efficiency of investments in fixed capital and the efficiency of current expenditures separately that investments in fixed assets, as more long-term, contribute to the implementation of process eco-innovations, and current costs – the introduction of organizational eco-innovations.

The REMS cities of St. Petersburg and Moscow, as well as Belgorodskiy, Moscovskiy, Leningradiy, Astrakhanskiy and Rostovskiy regions, are considered the least effective. In these regions, the maximum volume of investments in fixed capital and current expenditure bring only insignificant improvements in the environmental situation which indicates a formal approach to environmental management and a weak development of eco-innovation activity. At the same time, the difference between the

Region	Score	Target value for investments in fixed assets	Target value for current expenses	Difference between target and real investments in fixed assets	Difference between target and real current expenses
Belgorodskiy	0.041	71.22	210.40	-1665.68	-4920.87
Bryanskiy	0.749	42.28	405.42	-14.20	-136.13
Vladimirskiy	0.347	52.18	432.72	-98.12	-813.66
Volonezhskiy	0.130	47.01	384.63	-314.10	-2570.32
Ivanovskiy	1	60.60	356.95	-0	-0
Kaluzhskyi	0.185	216.04	123.95	-951.56	-545.91
Kostronmskoy	0.874	13.63	460.22	-1.97	-66.42
Kurskiy	0.215	10.13	414.36	-36.87	-1508.76
Lipetskiy	0.124	134.95	284.83	-949.36	-2003.80
Moscovskiy	0.043	53.23	369.14	-1179.47	-8179.54
Orlovskiy	1	6.80	429.67	-0	-0
Ryazanslyi	0.183	148.59	251.69	-664.11	-1124.97
Smolensriy	0.564	48.36	426.36	-37.44	-330.01
Tambovskyi	0.221	200.97	156.96	-708.45	-553.28
Tverskoy	0.448	24.195	454.11	-29.81	-559.41
Tulskiy	0.137	76.86	323.96	-485.14	-2044.91
Yaroslavlskiy	0.219	45.41	656.59	-161.89	-2340.88
Moscow City	0.023	191.153	188.44	-8029.65	-7915.85
Karelskaya Resp.	0.877	88.08	1475.55	-12.32	-206.35
Komy Resp.	0.035	174.81	72.26	-6721.45	-2013.14
Arhangelskiy	0.655	623.42	1838.70	-328.58	-969.10
Vologodskiy	0.056	189.15	150.99	-3181.55	-2539.71
Kaliningradskiy	0.410	133.28	311.46	-191.52	-447.54
Leningradskiy	0.033	147.08	182.66	-4296.52	-5335.84
Murmanskiy	0.383	207.33	2322.10	-334.26	-3743.70
Novgorodskiy	0.387	125.72	348.85	-199.38	-553.25
Pskovskiy	1	53.4	483.9	-0	-0
St.Peterburg	0.019	160.68	76.07	-8471.12	-4010.53
Adygeya Resp.	1	165.1	68.6	-0	-0
Kalmykiya Resp.	1	71.2	19	-0	-0
Krasnodarskiy	0.166	83.08	785.35	-417.32	-3944.85
Astrahanskiy	0.039	162.19	113.56	-3934.21	-2754.55
Volgogradskiy	0.162	147.73	557.79	-762.97	-2880.71
Rostovskiy	0.064	171.56	220.14	-2510.04	-3220.76

Table 2. Results of the solution of the DEA problem (CCR, input-orientated) for the regions of the Central, Southern and North-Western Federal Districts of Russian Federation

target and real values of investments in environmental protection and current expenditures on environmental protection can be estimated as the amount of funds spent ineffectively.

In addition, we tested the hypothesis put forward in the paper (Emilsson and Hjelm, 2005) that the larger the territory, the more difficult it is for regional authorities to carry out environmental management functions on it. To do this, we calculated the nonparametric correlation coefficients of Spearman and Kendall between the score of the EMS efficiency of a region and a) the number of its population; b) the volume of GRP. Nonparametric correlation was applied because the data on the number of population and the volume of GRP in the regions of the European part of Russia do not have a normal distribution. The calculation results showed that all coefficients are statistically significant at the level of 0.05 and negative (Table 3).

	Spearman Rank Order Correlation	Kendall Tau Correlation
Score and Population	-0.707	-0.539
Score and GRP	-0.839	-0.672

Table 3. Correlation between the efficiency score of REMS and the size of the region

Thus, indeed, it can be recognized that the authorities of the larger regions (in terms of population and size of the economy) do less well with the functions of environmental management.

5. Conclusions

The study contributes to the literature in several areas: 1) an approach has been proposed for defining a regional environmental management system as an aggregate of regional institutions that manage budgetary and extrabudgetary funds for environmental protection; 2) a method was proposed for evaluating the effectiveness of regional EMS based on the use of DEA models with negative outputs; 3) an evaluation of the effectiveness of the EMS regions of the European part of Russia was carried out, effective and inefficient regions were identified, the amounts of funds spent inefficiently were determined; 4) the hypothesis was verified that the size of the region's economy (assessed by GRP volume and population size) affects the efficiency of the EMS, and this effect is negative.

The proposed method of setting the outputs of the DEA model for its application to solving problems of assessing the level of development of eco-innovation activities in a region can also be used for models with a variable return to scale. In the latter case, the economic and managerial interpretation of obtained results will be more complicated, since it will be necessary to interpret not only the calculated efficiency scores, but also the direction and magnitude of the economies of scale.

It is also necessary to stipulate specifically one noticeable limitation of the practical example for calculation efficiency scores of regions: the annual period taken into consideration is likely to be too short to draw reasonable conclusions about the effectiveness of investments in fixed assets aimed at improving the environmental situation. However, this drawback is a shortage of the calculated example and is not a drawback of the developed approach to specifying and converting the outputs of the model. To eliminate it, it is necessary to identify the value of time lag between investments in fixed capital and return on investment (which is possible with the help of traditional econometric models) and include this lag in the period for which the difference in environmental quality indicators is calculated. The construction of the necessary econometric models is not included in this paper due to limitations on the size of the article.

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Researching the Intent and Attitude of Local Communities from Protected Areas Regarding the Development of Eco-Sustainable Goods and Services through Ecotourism. The Case of National Park of Sibillini Mountains

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Abstract

The research objective of this paper aimed to assess the attitude and intent of the local communities from Norcia in the protected area – National Park of Sibillini Mountains to four major steps in the development of eco-sustainable goods and services through ecotourism: minimizing environmental damage, minimizing socio-cultural damage, maximizing the economic benefits of local communities and operational and quality management. In this context, was conducted a quantitative research which implied the administration of 62 questionnaires with two measurement Likert scales (the attitude and intent of the local population) for a set of 17 statements on development of eco-sustainable goods and services through ecotourism. Descriptive statistics were utilized for data analysis, and the Spearman coefficient was applied to evaluate the attitude-intention relationship. The Spearman test indicated the significantly positive correlation between attitude and intent in two dimensions: minimizing socio-cultural damage and maximizing the economic benefits of the local community through the development of eco-sustainable goods and services through ecotourism.

Keywords: *ecotourism; protected areas; goods and services eco-sustainable.*

1. Introduction

The approach was essential for the researchers to identify and understand the position of residents regarding the use of ecotourism as a tool for balancing environmental conservation with development (Gursoy & Rutherford, 2004). Determined by beliefs and intrinsic factors associated with an individual's behavior, attitude may be favorable or unfavorable to an object, action, or event, and reported to communities in protected areas may create a holistic view of its heterogeneity, in the present case on the development of eco-sustainable goods and services through ecotourism.

Intention is the direct result of assessing the behavior of a person with minimal external influences (Kuvan, 2005), and in the context of the development of eco-sustainable goods and services, this is associated with the behavior of residents in relation to minimizing environmental and socio-cultural damages, maximizing economic benefits to communities local and operational and quality management. Identifying community intentions facilitates the gathering of information on responsiveness to the development of eco-sustainable goods and services through ecotourism.

2. Literature review

Ecotourism is identified as a stimulating source of economic benefits for local communities in protected areas. As noted by Taylor et al. (2002), ecotourism is an opportunity for stimulating local communities to create eco sustainable goods and services in order to increase tourism and, consequently, they increase local incomes and improve conservation of environmental.

Also, ecotourism assurances that the sustainable goods and services consumption generates, through ecotourism business, income to local communities (Farrell & Runyan 1991; Bhattacharya, Chowdhury and Sarkar, 2011, Felicetti, 2017).

According to Patterson (2002), an ecotourism business that develop eco-sustainable goods and services must be these characteristics: low impact on a protected area; implicate of stakeholders in the forecasting, growth, application and checking phases; regulates of tourists to areas; finance the conservation groups' work in order to preserve the protected area; directs tourists on the areas to be visited; employs local people and buys local product; identifies that nature environmental is an essential component to the tourist experience; guide are essential to know or interpreter natural environmental; guarantees that wildlife is not stressed; respects of the local and traditional cultures.

Additionally, Lee (2008) noted local communities could develop goods and services eco-sustainable when they have favourable perceptions regarding territory preservation and economic benefits produced by ecotourism. Moreover, the local communities are key actors for developing eco-sustainable goods and services through ecotourism (Backman and Munanura (2015; Felicetti 2018) and its management by local communities can be influence the ecotourism growth (Marulo 2012).

According to Byrd (2007), ecotourism have to developed, planned and managed in a sustainable way whereas integrating the local communities in the entire process. Moreover, community participation could put in evidence the capacity of local communities to influence the result of the whole development process that has an economic impact on local communities

themselves (Larsen & Wearing, 1994).

The direct and indirect incentives from ecotourism development could help improve the attitude in the direction of preservation (Stem, Lassoie, Lee, Deshler, & Schelhas, 2003; Walpole & Goodwin, 2001) and generate economic benefits for local people. Moreover, tourism in protected areas can provide direct incentives to the local communities (Nyaupane & Poudel, 2011) that have the possibility to sell eco sustainable goods and services to tourists (Ashley, 2000; Cattarinich, 2001; Scheyvens, 2007). Moreover, many case studies have underlined that many economic incomes remain at the local community's level (Dimanche & Smith, 1996; Harvey & Hoare, 1995). In addition, the development of eco sustainable goods and services can help maximize the relationships between supply and demand and minimize loss (Ollenburg & Buckley, 2007).

According to Hjalager and Johansen (2012), sustainability through develop goods and services in protected areas could be an income possibilities and provide high quality of local products that intrigue to tourists to make a culinary experiences. In particular, the types of local products offered can be influence tourists' reason when they choose protected areas (Cohen & Avieli, 2004). Consequently, it is relevant to put emphasis on eco sustainable goods and services accessible in order to promote an ecotourism destination because it could be an important value added for the destination themselves (Alias et al. 2015).

Ecotourism principle is carried out economic benefits to local communities, principally people living in protected areas (Page and Dowling, 2002; TIES, 2013). In order to maximize economic benefits, it supporters for the promotion of recycling, energy efficiency, water conservation, and the formation of profitable opportunities for local communities (Randall, 1987). Besides, social advocates due to its potential to create social benefits for all, improves the lives of vulnerable groups, and empower local communities (Scheyvens, 1999).

In general, the advantage of eco sustainable goods and services consumption is that it support to maintain of the local business activities and sustain local communities, and also the money spent around in the local communities. Moreover, it reduces eco sustainable products miles consequently dropping use of fossil fuel and decreases air pollution. Therefore, tourists increase benefits from local products where the consumption is connected with healthier eco sustainable goods and services choices and better understanding of them through dialogues with local producers (Brain, 2012).

Obviously, the eco sustainable goods and services are produced by local communities at an ecotourism destination have implications not only to the local income, but also to the local culture and safeguarding the environmental sustainability of the ecotourism destinations. This would give benefit to the tourists and local community (Sims, 2009).

Ecotourism should be promoted in order to increase environmental consciousness and stimulate local communities to be involved in policy-making. Moreover, during the development strategy they should consider local tradition and cultural knowledge (UNWTO-UNEP-WMO, 2008).

In many local communities from protected areas, ecotourism is seen as a solution for reconciling development and sustainability (Coria et al., 2012; Heng Zhang et al., 2012). On one hand, the local communities are central actors of tourism in protected areas and an insightful understanding of their attitudes is important to achieve the development of eco-sustainable goods and services. On the other hand, the local communities are influenced by protected areas and associated tourism both directly and indirectly through its existence and capacity to attract tourists.

In addition, local communities generates new sources of environment conservation, and reinforce or revive traditional culture and lifeway. (Butler & Hinch, 2007; Honey, 2008; Zeppel, 2006). For this reason, it is necessary that the local people invest in eco-sustainable goods and services (Öztürk, 2015).

Norcia (Nursia in Latin) is an Italian local community in the National Park of Sibillini Mountains with surface of 275, 58 Km^2 and 4981 residents. The rivers present in the area are Corno, Torbidone, Sordo and Nera. In Norcia, there are nearly 1000 species of flora, over 200 species of vertebrates and about 50 species of invertebrates. The flora species are represented by: Agropyron repens, Anthemis tinctoria, Arctium minus, Bernh, Artemisia vulgaris, Asperula arvensis, Ballota nigra, Bromus sterilis, Campanula glomerata, Capsella bursa pastoris Med., Capsella rubella Reuter, Carduus pycnocephlus, Chaerophyllum aureum, Chelidonium majus, Chenopodium album, Chenopodium bonus hericus, Chrysanthemum parthenium, Cirsium aryense Scop, Conium maculatum, Cruciata laevipes, Dactylis glomerata, Galium aparine, Geranium pyrenaicum Burm., Geum urbanum, Heracleum sphondylium, Heracleum sphondylium, Ternatum Brummit, Lamium maculatum, Lapsana communis, Lolium perenne, malva neglacta Wallr., Malva sylvestris, Medicago lupulina, Poa alpine, Poa trivialis, Ranunculus lanuginousus, Rumex crispus, rumex obtusifolius, Sambucus ebulus, Sambucus nigra, Sanguisorba minor Scop., Silne alba Krause, Stachys germanica, Stachys sylvatica, Stellaria media Vill., Sylibum marianum Gaert, Taraxacum officinaleWeber, Thlaspi perfoliatum, Trifolium repens, Urtica diodica, Veronica chamaedrys, Veronica persica Poiret and *Ribes uva-crispa*. The fauna species of vertebrates are represented by: Apennine wolf, wild cat, porcupine, fox, roe deer, wild boar, viper, marten, hare, skunk, badger, weasel, golden eagle, goshawk, sparrow hawk, peregrine falcon, owl, southern partridge, alpine chough and coral chough, gray crow, goldfinch, lark, quail, pheasant, golden oriole, black bunting, green fin, jay, nightingale, great spotted woodpecker, magpie, cuckoo, woodpigeon, Arctic plover, woodpecker, alpine finch etc. The fauna species of invertebrates are butterflies, beetles Duvalius ruffoi and Chrysocloa sibilla, crustaceans Chirocephalus marchesonii, Chirocephalus sibyllae and Paraleptophlebia ruffoli.

Norcia is composed by 27 villages: Agriano, Aliena, Ancarano, Biselli, Campi, Casali di Serravalle, Case sparse, Castelluccio, Cortigno, Forca Canapine, Forsivo, Frascaro, Legogne, Monte-Cappelletta, Nottoria, Ocricchio, Ospedaletto, Pescia, Pie' la rocca, Piediripa, Popoli, San Marco, San Pellegrino, Sant'Andrea, Savelli, Serravalle, Valcaldara. Norcia is surrounded by stonewalls (cinta muraria). Inside Norcia, there are anthropic attractions such as: Saint Benedetto church of XII century, Saint Maria Argentea Cathedral, Saint Agostino church, Town Hall of XIV century, the Castellina museum, which is a fortified residence built in 1554, the Temple of Norcia, the Saint Giovanni and Saint Francesco church of XVI century and the Madonna delle Nevi church built in 1500.

The Norcinerie are typical shops in Norcia that produce only pork meat specialties such as salumi-coppe di testa, lonze e capocolli, lardellati, hams. Moreover in Norcia there are other local products – cheeses – pecorino, ricotte, caprini –, apples; honey; truffle; marshmallow; chestnuts, chickpeas, flour-wheat, maize, bread baked in a wood oven, biscuit, mistrà (liquor) and boiled wine (vino cotto). Many of these typical products are IGP and DOP certificate.

Norcia is the most important tourism attraction of the National Park of Sibillini Mountains. Its tourism is essentially self-centred and based on its own "values", which they are integrate perfectly with the protected area, where the Norcia municipality administration have been built a visitor center with dimensions and equipment adapted to the tourist flows.

It is characterized not only by food and wine tourism, but also by religious tourism (also due to its proximity to Cascia). The Norcia municipality administration expanded the tourism forms, focusing on congress and cultural tourism. In addition, they are concentrating on implementing policies and commercial protection of products ("Norcia Quality" brand, IGP and Parco brand for the lentil of Castelluccio and ham of Norcia).

Norcia has 13 hotels, 17 agro-tourism businesses, 9 bed &

breakfast, 3 holiday homes, 1 hostel, 20 restaurants, 4 shelters. The Norcia municipality administration is working with Umbria region administration in order to increase the tourism demand. In 2016, until the earthquake produced on 24th of August 2016, the Norcia municipality in collaborations with the National Park of Sibylline mountains and Umbria Region administrations achieved the following objectives: elaboration of the Master Plan in order to valorized the "Natural Site 2000" (Siti natura 2000); improvement of tourist information services provided by the visit centers, museums and park houses; enhancement of agro-food production and local gastronomy promotion; improvement of the tourism facilities and equipment in connection with Grande via del Parco and the Village of Campi.

3. Methodology

The quantitative research took place in April 2018 in Norcia and it aimed to assess the attitude and intent of the local community in the protected areas to four major steps in the development of eco-sustainable goods and services through ecotourism: minimizing environmental damage, minimizing socio-cultural damage, maximizing the economic benefits of local communities and operational and quality management. Quantitative research implied the administration of 62 questionnaires with two measurement scales (the attitude and intent of the local population) of the development of eco-sustainable goods and services through ecotourism. The statements were correlated with the issues highlighted by interviews with members of the community, each being attributed, according to the Likert scale, to one of the five gradations of the scale (total disagree, disagree, neither disagree nor agree, agree, total agree). To facilitate the interpretation of the data, the gradations of total disagree and disagree and the total agree and agree were associated, the neutral gradation neither disagree nor agree remained invariable. Descriptive statistics were used for data analysis, and the Spearman coefficient was applied to evaluate the attitude-intention relationship.

4. Results and discussion

As is noted in the table 1, that there is a major interest (96.77%) for the energy conservation related to the relation with the minimization of the environmental damage in the protected areas and the fact that the preservation of the natural environment is wanted, can also be seen by the agreement (82.26%) on the minimizing environmental contamination by replacing chemicals (used for cleaning, land fertilization, etc.) with biodegradable ones, but also that more than two-thirds of respondents have a favorable attitude to water conservation and establish carrying capacity for ecotourism activities in local communities in protected areas. The same attitude is also manifested in reducing the amount of solid waste.

	The *attitude* of the local population involved in the development of eco-sustainable goods and services through ecotourism.			**The *intent* of the local population involved in the development of eco-sustainable goods and services through ecotourism.**		
	Agree (%)	**Neither agree nor disagree (%)**	**Disagree (%)**	**Agree (%)**	**Neither agree nor disagree (%)**	**Disagree (%)**
Dimension 1 - minimize environmental damage						
1. Establish support capacity for ecotourism activities in local communities in protected areas.	27,42	3,22	69,36	40,33	6,45	53,22
2. Reducing the amount of solid waste.	33,87	4,84	61,29	40,32	8,06	51,61
3. Minimizing environmental contamination by replacing chemicals (used for cleaning, fertilization, etc.) with biodegradable.	16,13	1,61	82,26	27,42	4,84	67,74
4. Conservation of water.	22,58	4,84	72,58	32,25	6,45	61,29
5. Energy Conservation.	0	3,23	96,77	9,68	4,84	85,48
Dimension 2 - minimizing socio-cultural damage						
1. Conservation of specific traditions and protection against the influences caused by tourism development.	0	1,61	98,39	6,45	4,84	88,71
2. Integrate a code of conduct to minimize socio-cultural damage in management operations.	6,45	3,23	90,32	40,32	6,45	53,23
3. Consulting the community and other stakeholders to respect cultural values in planning and management activities.	40,32	8,06	51,61	67,75	3,22	29,03
4. Contributing to the development of local community through cash contributions or in the form of training programs for local staff/ population.	8,06	8,06	83,88	40,32	8,06	51,62
Dimension 3 - maximizing the economic benefits of the local community through ecotourism.						
1. Employing local community staff.	0.0	0.0	100	3,22	3,22	93,55
2. Accepting eco tourists within the community.	16,12	3,22	80,66	12,90	4,84	82,26
3. Accepting the negative impact of tourism as necessary in local development.	32,26	3,22	64,52	27,42	4,84	67,74
4. The emergence of investors outside the local community.	48,39	1,61	50	40,32	3,22	56,46
5. Strong development of ecotourism, similar to mass tourism.	35,48	3,22	61,29	40,33	6,45	53,22
6. Acquisition of local goods and services.	4,84	1,61	93,55	8,06	3,22	88,70
Dimension 4 - operational and quality management.						
1. Integration of ecotourism principles into management operations.	19,35	3,22	77,43	37,10	4,84	58,06
2. Implement best practices in developing eco-sustainable goods and services through ecotourism by staff.	25,81	1,61	72,58	40,32	4,84	54,84
3. Maximize the satisfaction of tourists by implementing the recommendations made following the analysis of the direct research based on the questionnaire.	3,22	4,84	91,94	9,68	4,84	85,48

Table 1. The attitude and intent of the local population involved in the development of eco-sustainable goods and services through ecotourism
Source: elaborated by authors

The almost unanimous positive attitude with percentages of 98.39% and 90.32% highlights the fact that residents want to preserve the cultural heritage and express the need for the integration of a code of conduct to minimize socio-cultural damage in management operations. More than 80% of those who develop eco-sustainable ecotourism products and services have a favorable attitude towards contributing to the development of local community through financial contributions or in the form of training programs for local staff / population. However, divergent opinions have been expressed regarding consulting the community and other stakeholders for respecting cultural values in planning and management activities (51.61%).

The sustainable development of the local community is a desideratum of the overwhelming majority, which has expressed its favorable attitude regarding the need to hire local community personnel (the unanimity of responses) and the acquisition of local goods and services (93.55%). Although divergences, favorable majority opinions (64.52%) were expressed regarding the acceptance of the negative impact of tourism as necessary for local development, but an unfavorable attitude (48.39%) regarding the emergence of investors outside the local community, to the detriment of those inside it.

Undoubtedly, the local population involved in the development of eco-sustainable goods and services wants to maximize the eco-tourists satisfaction by implementing the recommendations made after the analysis of the direct research based on the questionnaire (91.94%), the integration of ecotourism principles in the management operations (77.43%), and implementing best practices in the development of eco-sustainable goods and services through ecotourism by hired personnel (72.58%).

The degree of heterogeneity regarding the intent of locals involved in the development of ecotourism goods and services to minimize environmental damage compared to attitude is not much higher. The majority will support an energy conservation approach (85.48%) and encourage the minimization of environmental contamination by replacing chemicals (used for cleaning, land fertilization, etc.) with biodegradable ones (67.74%). Water conservation is a priority and 53.22% of those respondents want to establish support capacity for ecotourism activities in local communities in protected areas.

Not only the attitude is extremely favorable, but also the intention of residents to get involved in preserving specific traditions and protecting against the influences caused by tourism development (88.71%). However, it is noteworthy the strong fragmentation regarding the consultation of community and other stakeholders in respecting cultural values in planning and management activities (29.03%), contribution to the development of local community through financial contributions or in the form of training programs for local staff / population (51.62%), but also the integration of a code of conduct for minimizing socio-cultural damages in management operations (53.23%).

In terms of maximizing the economic benefits of the local community through the development of eco-sustainable goods and services through ecotourism, residents validated the need to hire local community personnel (93.55%), which can be correlated, among other things, with the acquisition of local goods and services (88.70%).

Concerning the intention regarding the tourist flows and the acceptance of the negative impact of tourism in the development process, an ethos of responses is maintained. 40.33% of those surveyed do not intend to support the development of ecotourism similar to mass tourism.

Over 85.00% of the residents expressed their intention to get involved in maximizing the ecotourism satisfaction by implementing the recommendations emerging from the analysis of the direct research based on the questionnaire. The intention to integrate the principles of ecotourism into management operations, but also to implement good practices in the development of eco-sustainable goods and services through ecotourism by staff, although inferior to the expressed values of attitude towards them, falls within the positive parameters regarding the consent of the residents, with values of 58.06% and 54.84%, respectively.

As regards the link between the positive attitude of the residents towards the four dimensions of the ecosystem eco-sustainable products and services development through ecotourism and the intention followed by a positive behavior when acted upon, this is characterized by the aggregate average score between them. The average score was high in respondents' attitudes to minimizing socio-cultural damage (average = 4.15) and operational and quality management (average = 4.45) and relatively low, minimizing environmental damage (average = 3.88) and maximizing benefits economic development of the local community through the development of eco-sustainable goods and services through ecotourism (media = 3.63). However, the positive attitude of residents towards the development of eco-sustainable goods and services through ecotourism does not imply that they will also engage in ecotourism-related activities.

The Spearman test (see table 1.2.) shows the significantly positive correlation between attitude and intent in two dimensions: minimizing socio-cultural damage (Spearman = 0.39, $p < 0.1$) and maximizing the economic benefits of the local community through the development of eco-sustainable goods and services through ecotourism (Spearman = 0.63, $p < 0.1$).

Dimension	Media score		Spearman ρ	p
	Attitude	Intent		
Minimizing environmental damage.	3.88	3.31	0.393	0.001
Minimizing socio-cultural damage.	4.15	3.71	0.153	0.203
Maximizing the economic benefits of the local community through ecotourism.	3.63	3.33	0.630	0.000
Operational and quality management.	4.45	3.84	0.101	0.400

Table 2. The results of the correlation tests between the attitudes and intentions of residents
Source: elaborated by authors

There is no significant correlation between attitude and intent in minimizing socio-cultural damage and operational management and quality. While most have shown favorable feelings, many have not shown the intention of engaging in operational and quality management. The same discrepancy can be observed in minimizing socio-cultural damages.

5. Conclusions

The research aimed to assess the attitude and intent of the local community in the protected areas, based on questionnaire interviews, to four major steps in the development of eco-sustainable goods and services through ecotourism: minimizing environmental damage, minimizing socio-cultural damage, maximizing the economic benefits of local communities and operational and quality management. Two Likert scales with three gradations were used (disagreement, no agreement or disagreement, agreement) for a set of 17 sentences on the development of eco-sustainable goods and services through ecotourism. Descriptive statistics were utilized for data analysis, and the Spearman coefficient was applied to evaluate the attitude-intention relationship. The Spearman test indicated the significantly positive correlation between attitude and intent in two dimensions: minimizing socio-cultural damage and maximizing the economic benefits of the local community through the development of eco-sustainable goods and services through ecotourism. There is no significant correlation between attitude and intent in minimizing socio-cultural damage and operational management and quality. Therefore, it can be concluded that the local community level in the national park is open to the development of eco-sustainable goods and services through ecotourism, as an alternative to economic growth and improvement of living conditions.

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Food Quality Schemes: The Case of Slovenia

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Abstract

The paper investigates the adoption and diffusion of the European Union food quality schemes focusing on organic food, protected designation of origin, protected geographical indication, and traditional speciality guaranteed products. The country specific focus of results and findings on food quality schemes is on Slovenia, which has potential to increase importance of these possible premium price segment markets with expected higher demands for food quality and safety for health of consumers and benefits to the environment in comparison to conventional food products. The importance of food quality of locally produced products is promoted in activities carried out through several national projects regarding local origin, Slovenian food and countryside with designation of higher food quality. Food quality schemes and protected food products are identified to have economic impacts on supply and demand side of food markets with potential for the producer organizations involved in value chains and the protection of higher quality of locally produced food.

Keywords: *local food; promotion; food quality scheme; Slovenia.*

1. Introduction

The main objective of this paper is to identify market potential for products produced and processed according to the EU quality schemes – organic food products, protected designation of origin (PDO) products, protected geographical indication (PGI) products and traditional speciality guaranteed (TSG) products of Slovenia in EU and international markets. The review of studies and practices on the adoption and diffusion of the EU quality schemes as well as their impact on value added has shown that organic food and PDO, PGI, and TSG products are considered potential challenging issues for further research with practical and economic policy values. However, the demand for organic products, PDO, PGI and TSG products in Slovenia did not increase rapidly and even declined during the economic recession. The price premium for organic products restricts demand due to the lower purchasing power of consumers. These are new market developments where education, promotion and awareness of organic products can be important (Peira, Soster and Bonadonna, 2018). As consumers become more educated and informed of food issues, they are more likely to be inclined to buy organic products whether it is because of factors like food safety, concern for the environment, or health reasons or lifestyle (Bojnec et al., 2019; Lehota et al., 2014; Zampi 2015).

The rest of the paper is organised as follows; in section 2 food quality schemes in Slovenia are presented. Section 3 presents protected products in EU. Section 4 presents economic impacts of quality schemes. Section 5 presents problems arising from the producer organizations involved in the protection of goods of higher quality. Finally, Section 6 derives main conclusions.

2. Food quality schemes in Slovenia

The main aim was to identify the market potential for products produced, processed and traded according to the EU quality schemes in domestic and international markets for: organic products, protected designation of origin (PDO), protected geographical indication (PGI), and traditional speciality guaranteed (TSG). First, we reviewed the EU regulations regarding the quality schemes and provided information about the importance of the quality schemes. Second, we elaborated on how the schemes have been implemented in Slovenia. The focus lies on the most or second most important products. The preference was one organic and one other product (PDO, PGI, TSG). The analysis covers the demand as well as the supply side, trade of and challenges for organic products and for the second quality schemes, whose relevance have increased lately.

Analysis of the demand side of organic products and the second quality schemes in the country covers: overall trends and attitudes toward organic products, expenditures for organic product in the last years, category of consumers who primarily buy organic products, which organic products are mostly bought, and where, in what type of markets such as spot market, super market and similar.

The supply side for organic products in the country includes producers and their developments in organic production in the last years. In addition, it covers trade volume in total, intra- and extra-EU sales, problems related to production and trade of organic products, and investment in research concerning ecological cultivation. It was the aim to collect the same information, as for organic products, also for the second quality scheme.

3. Protected products in EU

In 1993, the European Union passed a regulation that allowed for the protection and designation of specialty foods linked to a particular geographical region. There are three categories of designation: PDO, PGI, and TSG.

PDO designates that production, processing, and preparation have all taken place within the geographical area whose name the product bears and that the quality or characteristics of which are essentially or exclusively due to a particular geographic environment. While PGI designates that the product

originates from the named geographical region and that a specific quality, reputation or other characteristic attributable to that geographic origin, the production and/or processing and/or preparation and takes place in the geographic area defined (Vroom-Cramer, 1997). TSG designates traditional products that have a minimum historical record of 25 years.

Until April 2019 there are 1411 protected products under EU schemes: 629 under PDO, 725 under PGI, and 57 under TSG. The most protected products and also the largest tradition are found in Italy and France. In Italy there are 167 products protected under PDO, 130 under PGI, and 2 under TSG. In France there are 104 products protected under PDO, 140 under PGI, and 1 under TSG. Other countries with a large number of protected products are Spain, Greece, Portugal and Germany. All other countries have smaller number of protected products. Number of products protected under PDO, PGI, and TSG for each country is shown in Figure 1, and a total number of products, protected in each country in Figure 2.

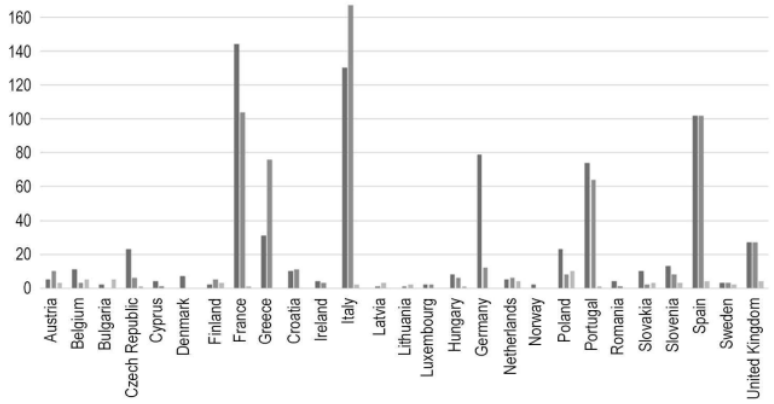

Figure 1.
Number of products protected under PGI, PDO and TSG

Source: European Commission, 2019

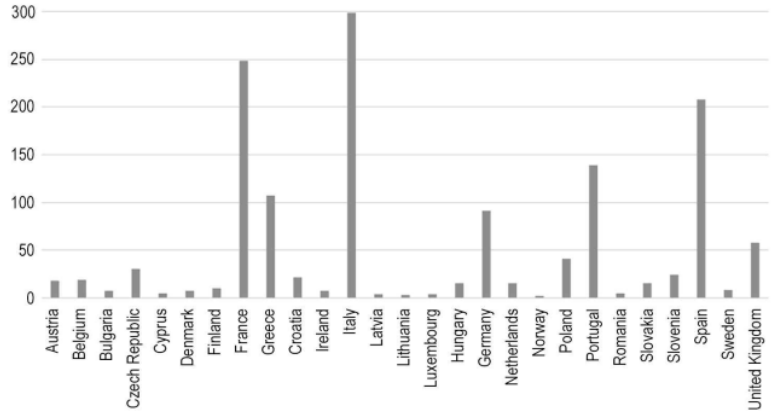

Figure 2.
Number of protected products

Source: European Commission, 2019

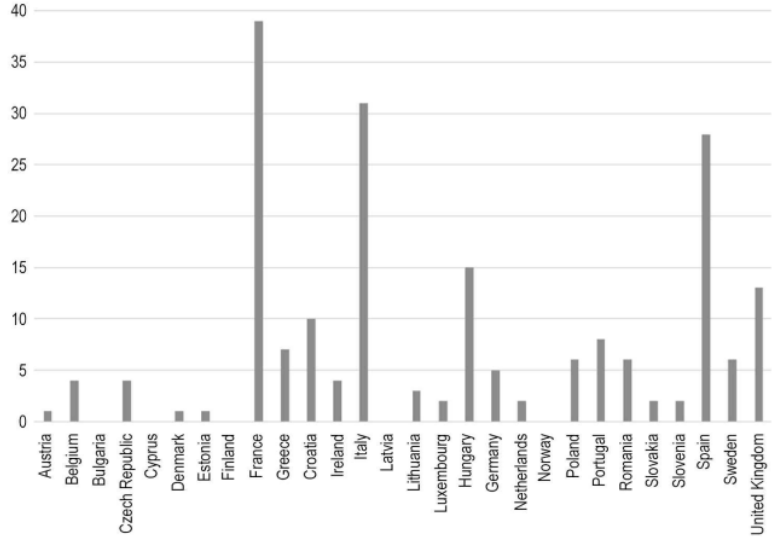

Figure 3.
Products in the process of acquisition of protection

Source: European Commission, 2019

The number of protected products is constantly growing. At the moment there are 200 applied products – in the process of protection. In Slovenia there have applied one product under PGI: Kraška panceta (Karst pancetta) and one product under TSG: Slovenska potica (Slovenian potica). Countries with the largest number of applied products are again France, Italy, and Spain, followed by Hungary and United Kingdom. The distribution among countries that have applied their products for protection is shown in the figure below, Figure 3.

Among the types of products that are protected there are most fruits, vegetables and cereals, fresh meat and meat products, cheeses, oils and fats, and smaller number of other products (also non-food products).

4. Economic impacts of quality schemes

Quality schemes in Europe include a large number of goods and products, which are very different by their characteristics (different kinds of products, different historical basis, different number of certifies producers, vast difference in scale of production and similar). Nevertheless, the project «Food quality assurance and certification schemes managed within an integrated supply chain» (Gay, 2007) merged some of their characteristics.

Benefits of quality schemes

Benefits for producers are easier market access, higher selling prices of both raw materials and finished products and higher revenue, protected uniqueness of production and processing.

Benefits for commercial agents are compliance with standards and reduction of control costs. Protected products are already subjected to certain forms of control so there is no need for additional checking, which also means some reduced costs.

Benefits for consumers are provision of safe food, ensuring animal welfare, a guarantee that the product is produced or processed in a traditional manner and a guarantee that the products have excellent quality and organoleptic characteristics.

Inclusion in quality schemes has also wider benefits: greater job opportunities due to local processing; and many other intangible advantages such as preservation of traditions, preservation of rural and cultural landscapes etc.

Costs incurred in the integration of producers in quality schemes

The inclusion of producers in various quality schemes generates some additional costs. The costs can be divided into two groups: first, there are direct costs incurred by participation in quality schemes (membership fees, external and internal inspection, certification, and similar). Second, there are indirect costs incurred by adapting the production to standards required by quality schemes (investment costs for the acquisition of conditions and various additional production costs – analysis, records and similar). Direct costs are easier to estimate and are lower than indirect costs. Indirect costs are also difficult to assess.

Economic analysis of the added value of the involvement of producers in quality schemes

If we compare increase in selling prices and increase in costs due to the inclusion of certain products in quality schemes, the majority of products have greater additional revenue than the extra costs, but this is not the case for all products. Thus, it may happen that the certified products have higher prices but those prices do not cover the additional costs. The effect of participation in quality schemes for producers of raw materials is usually small. Greater benefit and added value arise mainly from intermediaries, processing plants or in the retail stage (Szente et al., 2015).

The impact of quality schemes in rural development

Inclusion of product into quality schemes has also a positive impact on all three axes of rural development.

- Contribution to the first axis (competitiveness): with management of the quality and differentiation of products can improve the competitiveness of production.
- Contribution to the front axis (environmental protection): this can contribute to extensive production, maintenance of fragile agro-eco system and resource management.
- Contribution to the third axis (quality of life): this can contribute to local processing, animal-friendly farming, the traditional production system and way of life, and promotion of tourism on farms.

5. Problems arising from the producer organizations involved in the protection of goods of higher quality

Key tasks of the producers of the products of higher quality are organization of internal control, and joint activities in the field of marketing and promotion of protected products (Arfini et al., 2006). Problems faced by groups of producers of products of higher quality can be summarized in two groups: internal factors and external factors. These are described below.

5.1. Internal factors

Internal factors are mainly related to the efficiency of the organization of individual groups and their strategic and operational marketing orientation.

Organization of individual of producer groups

Producer groups are organized in the form of associations, cooperatives or economic interest group (EIG). In most cases, the driving force behind the association is one of the producers, or at best a small number of producers who have a dominant influence in the group. Often among the members of the group there is no real cooperation, their operation is primarily intended for the implementation of procedures of internal control and certification, which also encourages existing legislation and the system of financial incentives.

The most common problems in the organization of producer groups for products of higher quality are:

- Large operating costs of the producer group (cost of internal and external control and the costs of the organization and the very functioning of producer groups);
- Lack of producers involved in the system (they do not see the benefits of inclusion)
- High costs of certification (because they are distributed among relative small number of producers).

Strategic and operational marketing orientation

At the level of producer groups, a common marketing orientation is weakly present, with the exception of products whose offer is based on one relatively strong producer. In practice marketing largely takes place through the producers themselves, marketing through the group is purely symbolic.

In Slovenia, in terms of marketing orientation of the producer group, associations are not the most appropriate form of organization due to limitations in performing marketing functions. Cooperatives and economic interest groups are from that perspective preferable, but require more coordination among members in key decisions, and especially their equivalent power, which is rare in practice (Konstantinides, 2006).

Problems in providing total marketing orientation:

- inadequate supply of protected products (some do not have a market potential that would transfer additional investment, while others do not have interest among producers, because they see no added value);
- bad public presentation of the protected products (no recognition of individual schemes, the market has not received properly labelled products); importance of coordinated action on the market;
- producers give greater importance to product quality than to effective marketing of the products;
- lack of uniformity of the concepts and practices of mar-

keting among producers of the same type of products (different strategies for the elements of the marketing mix for the same products);
- ❑ unclear marketing role of producer organization;
- ❑ inadequacy of existing legal forms of producer groups.

5.2. External factors

External factors are primarily related to the characteristics of markets for individual protected products and the characteristics of the wider environment.

Factors on the demand side

Consumer purchasing habits in Slovenia are largely linked to shopping centres, which are in the domain of a small number of large retailers. Alternative distribution channels (specialized stores, markets, direct sales and similar) are poorly developed and not interesting for large producers. Price is an important factor in customers' decision-making. Customers rarely recognize higher quality products and they often do not recognize the added value that would justify the higher price.

Gradually the situation is improving as market research is pointing to the positive developments in the recognition of certain products (such as Prekmurska šunka (Prekmurje ham)). It can also be seen a growing interest of traders for inclusion of products of higher quality in the offer.

Income growth also leads to the restructuring of food demand in the direction of increasing demand for products of higher quality (higher price).

A great potential is also opening on the supply side in hospitality and tourism sectors that are also focusing more on the offer for more demanding guests.

Competition

Products of the highest quality are primarily faced with competition from cheaper food products. The answer to this kind of competition is the strategy of differentiation based on specific product characteristics: in particular, branding and regional origin, method of production, a tradition of production and processing (Tregear and Gorton, 2005).

There is also some unfair competition which is misleading consumers by offering products of lower quality, but in their marketing mix uses elements strongly reminiscent of protected products such as for example in cases of Prekmurska šunka - Šunka po Prekmursko (Prekmurje ham – ham in Prekmurje style) and Prleška Tünka – Tünka po Prleško (Prleška lard – Lard in Prlek style).

It often comes to selling uncertified products that use protected name (Prekmurska gibanica). Generic names (gibanica (layered cake), šunka (ham), tünka (lard)) or similar specific names (domača gibanica (homemade layered cake), hišna gibanica (domestic layered cake)) are also used for similar products, usually of lower quality, which hinders quality differentiation of protected products. This situation certainly lowers the interest of producers in inclusion to the protection system. In this area transparent certification system and effective informing of consumers about the elements of the recognition of protected and certified products is of great importance. It is also necessary to ensure the effective sanctioning of offenders.

Environment

The environment represents a series of factors that are not directly connected to production or consumption of protected products, but have an indirect influence to implementation of protected products of higher quality. Cultural shifts in the direction of increasing awareness of the importance of controlled production and processing of food certainly have a positive impact on the market position of the products of higher quality. Stressing the importance of maintaining traditions and heritage has also a positive impact, and is becoming increasingly important for the creation of national or regional identification.

Important roles in the continued implementation of higher quality products have also the means of public resources - both EU and national funds and regional funds. In this context, efficient channelling of funds available for rural development is of great significance, particularly in terms of providing support to those segments with greater needs.

6. Conclusion

The paper provides interesting trends, open questions and future developments based on the review outcome for Slovenia. A special attention was given to organic products and PDO, PGI and TSG. Similar to some other EU countries, regarding organic production, one of the issues is still the unclear definition of a group of products like 'organic products' or 'PDO products', and other quality schemes like private labels.

The importance of organic production is increasing. The focus has been on higher quality, protected labels "organic farming" and logos for ecological farming. In fact, quality is an important factor for every producer and buyer, whether dealing with commodities produced in accordance to basic standards or with the high-end quality products. Producers should build and rely on high quality products and their reputation to sustain competitiveness and profitability. In this respects quality control and quality assurance can play a crucial role. The observation techniques and activities used to fulfill requirements for quality control, while the planned and systematic activities implemented in a quality system so that quality assurance requirements for a product will be fulfilled (Kehoe, 2012). In addition, the consumer association has been playing an increasing role in the aim to improve quality control and consumer's protection. Furthermore, different websites have become crucial channels for marketing and promotion activities and thus are important for promoting non-conventional production.

The organic production and the EU quality schemes characteristics have been investigated for Slovenia. The findings on organic food markets and the EU quality schemes are also important for further research as it is still little information available with respect to the PDO/PGI/TSG products. More information is available about the organic sector. However, the EU-Commission has set up websites with information on the PDO, PGI, TSG logos (European Commission, 2019).

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Food & Beverage Businesses Strategies: What Issues in the European Market?

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Abstract

The present study investigates how managerial practices in food&beverage industry have affected the reaction of this sector to the global financial crisis. The paper adopts as case study some big groups in European context in order to show how different managerial strategies have determined the performance during the crisis and after it. A descriptive analysis based on budget and report data indicates that the degree internationalization of the business has strongly determined the resilience during the crisis, but also the performance after. International market diversification has smoothed the negative impact of the crisis acting as a risk-diversification tool. This is shown by linking business performance, regional sales volumes, exchange rates and by taking into account also factors affecting the beverage market demand.

Keywords: *company; finance; marketing; responsibility; risk.*

1. Introduction

In the last decade, the global financial crisis and the following European Monetary Union (EMU) sovereign crisis have had effects on all European economic compartments and the food-beverage sector has been no exception. Growth in the food industry scored +7.6% in 2007 but, following the beginning of the global financial crisis, it has then reduced by almost 3% as, already in 2008, the growth in such industry fell to 4.7%.

Starting from 2008, rising food prices have resulted from the global crisis and this phenomenon has hit businesses in the food-beverage industry. As the existing literature has mainly studied the effects of the global financial crisis in Eastern Europe, this study focuses on the effects on Western European (namely French, German and Italian) multinationals. Food & Beverage businesses in such countries have experienced reduced investments in agriculture and a fall in demand for products. As the result of the global financial crisis, banks have imposed strict requirements on collaterals and have charged higher interest rates. This has obviously resulted in liquidity problems and increased pressure on cash flow. In a context where demand and trading were dramatically slowing down, managerial reaction has been strongly needed. Thus, the main aim of the article is to focus on the beverage compartment and explain how beverage management in Europe has reacted to the crisis and what has been the performance in the face of the market changes related to the crisis.

Furthermore, it cannot be ignored that policies to react to the increase in food prices and minimise the negative impact of the financial crisis on food consumption have been implemented by national governments and by European institutions. Therefore, the article also relates the managerial outcomes to the implemented economic policies and general macroeconomic trends. This is of paramount relevance given heterogeneous level of internationalisation of leading companies in the food-beverage industry. Fast globalization has regarded the food-beverage industry (due to the increase in international trade and financial system integration) and this has made this sector more sensitive to macroeconomic fluctuations. However, some companies have retained their local characteristic, while others have increased their global perspective. It can be argued that the global financial crisis has affected these multinational differently according to their level of internationalisation. Related to this aspect, also the reaction to the crisis in the industry have been different depending on the international links of each multinational.

Specifically, the paper focuses on three cases: Pernod Ricard (France), Brau Holding International (Germany), Campari Group (Italy). By adopting these three cases, the article shows how having a strongly internationalised business activity has acted as a safety net during the crisis, while European beverage multinationals with more localised activities have been hit by the crisis more substantially. This has also reflected in the fact that the management of more localised beverage groups have been forced to adjust more substantially following the crisis.

The descriptive analysis based on budget and report data indicates that the degree internationalization of the business has strongly determined both the resilience during, and the performance after, the crisis. International market diversification has smoothed the negative impact of the crisis acting as a risk-diversification tool. This is shown by linking the business performance, regional sales volumes, exchange rates and by taking into account also factors affecting the beverage market demand. In relation to the diverse impact of the crisis, the article also relies on the integration-responsiveness paradigm in order to highlight the different reactions undertaken by the multinational managements.

2. The recent scenario

Fischer and Schornberg (2007) show how competitiveness has increasingly affected the beverage market (Boccia and Sarnacchiaro, 2018; Traill and da Silva, 1996). At the same time

the increasing degree of globalization has opened market opportunities in the sector (Black, 2016). Both phenomena have required stronger and more effective management in the industry in an international scenario (Ferreira, 2001; Rugman, 2002). In order to explain the strategies and organisational settings of multinational corporations, contributions in the literature have mainly relied on the integration-responsiveness framework (Covino, 2016; Prahalad, 1975; Prahalad and Doz, 1981; Doz, 1979). According to this theoretical framework, multinationals face conflicting pressures for cross-border integration and local responsiveness when going abroad. The final mix between cross-border integration and local responsiveness is determined by the industry characteristics (Prahalad and Doz, 1987; Doz et al., 1981).

According to the industries classification provided by Rall (1987) and Ghoshal and Nohira (1993), beverage industry showed low score regarding pressures for global integration. On the contrary, according to these authors, beverage industry businesses faced strong pressure for local responsiveness (Dörrenbächer and Geppert, 2016). However, the results reported by Filippaios and Rama (2008), based on more recent data, suggest that the level of internationalisation in the food and beverage industries started increasing in the late 90s. Using a database of 7,000 affiliates, the authors show that 11% of the companies in the dataset can be considered as global businesses, while 27% of firms had bi-regional activities. Thus, despite the macro-industry level perspective depicts beverage industry as local, great heterogeneity can be found at micro-firm level with some companies being very globalised. Such heterogeneity has allowed for specific case analyses regarding different aspects of multinationals business strategies in the beverage industry (Boccia et al., 2018).

However, to the best of my knowledge, no contribution in the literature has investigated the effects of the global financial crisis on the activity and performance of the beverage multinationals. As the crisis has hit different regions around the world asymmetrically, it can be argued that different levels of business internationalisation have determined heterogeneous degrees of performance and called for different business strategic reactions in the beverage industry. The present study intends to be a first attempt towards eliminating this gap in the literature.

3. Business case studies

In this section three different case studies are presented. The choice of the three groups (BHI, Campari and Pernod Ricard) has been based on the following rationale. First, Groups based in different countries have been targeted and, among these, European ones that are in the EMU have been selected. In this way, the three cases refer to the same industry (beverage sector), to different national markets but no currency differences characterise these three markets (they all adopt the euro as currency). These premises guarantee that the management of each group faces similar sector overall conditions, experiences different trends in the national economic environment and relates to the same international currency exchange rates. The analysis focuses on the period of the global financial crisis and the following years. The case studies mainly rely on data retrieved from the balance sheets of the three Groups and by data made available in the annual reports of each Groups, where international sales data are disclosed to the public.

Firstly, Pernod Ricard was born in 1975 out of the link-up of two aniseed drinks specialists, Pernod SA and Ricard SA, longtime competitors on the French market. After several acquisitions of relevant brands, nowadays the group can be considered as one of the biggest in the beverage sector and specifically in the production and distribution of spirits. According to Pernot Ricard (2009), the sales of the group increased by 9.3% between 2008 and 2009. Also the profits of the group went form 3.65 to 3.99 in the same period. Thus, despite the global financial crisis in 2008/2009, Pernod Ricard was able to keep its growth model on the right track. The main motivations for such resilience during the slowdown in the economy can be attributed to some of the main peculiarities of the Groups businesses and strategies: 1. the groups shows a strongly diversified geographic footprint (much more international even that Campari and BHI), with leadership positions in emerging markets that maintained satisfactory growth patters also during the crisis; 2. a portfolio of prestigious brands and products that were not affected by the increase in the price of primary goods and by falling demand in complementary markets; 3. a decentralised, and therefore highly flexible, managerial and organisational structure that was able to adjust in order to preserve the group revenues and profits; and 4. Strong positive effects of exchange rates variations on competitiveness. Both points 1 and 4 derive form the strong international profile of the Pernot Ricard business that goes far beyond France, for instance according to Pernot Ricard (2009) only 10.2% of total revenues of the group were generated in France before the crisis erupted.

In 2010, it is clear how the group had its main business activities outside France. This was also the result of a strong shift in the international distribution of the group activities, as a strong increase in sales occurred in the rest of the world (+13%) that balanced the reduction in the other regions (-9% in Europe and -1% in America). Such changes can be attributed to the different effects of the crisis across these regions. The mutation of the financial crisis into the EMU crisis probably generated the reduction of the business in this region, but the relative depreciation of the euro has compensated for this by increasing the sales in Asia thanks to an increase in competitiveness. These changes did not substantially affect the net profit of the group that stayed positive also in 2010 with a minor reduction from +4.19 millions of euros in 2009 to +3.78 in 2010. In the following years, this international market distribution has mainly allowed the Group to cope with the effects of the crisis without requiring substantial changes in terms of managerial decisions. In 2012, the data remained similar with the sales in the rest of the world increasing to 38%, while the contribution of the French market went below two digit values till 9% (Pernod Ricard, 2012).

Thus, we can conclude that differently than the two groups previously analysed, the Pernod Ricard was not forced to react substantially to the crisis due to its extreme internationalisation (with large amount of business conducted in Asia and in less developed countries in which the economic downturn generated by the crisis was weaker) and very low local activities that shielded its business from pressures of local responsiveness.

In the second case, the Schörghuber Corporate Group, founded in 1954 as a property development company in Munich, comprises four business divisions: Construction & Real Estate, Beverage, Hotels and Seafood. The group's beverage shareholdings are bundled in Brau Holding International (hereafter BHI), a joint venture with Heineken. With the Paulaner Brewery Group, the Kulmbacher Group and the Südwest Group housed under its roof, the enterprise is one of Germany's leading brewery groups, offering a wide range of different brands and beers. The Paulaner Brewery Group is formed by Paulaner, Hacker-Pschorr, Thurn und Taxis, Auerbräu and Hopf.

Germany's food and beverage sector was a peculiar case during the global financial crisis as its exports increased by 15% in 2008, after 9 years in which its growth was around 1% on average, with a continuing trend in the following years. However, such increase in export was accompanied by a continued contraction in the in domestic brewery market. Between 2008 and 2009, the consumption of beer in Germany decreased by 4.5% and the large breweries suffered losses.

Paulaner and its competitors have then faced a different situation between foreign and national markets developments following the crisis. As a reaction to this situation, in 2010 and 2011 the German beverage market has experienced a fierce price war in the retail sector, with several sales promotions carried out by the national brands (The Schörghuber Corporate Group, 2009; Sarno and Malgeri Manzo, 2016; Covino, 2011).

Despite the fact that overall beer sales had a 0.5% increase compared with previous year, in Germany beer sales decreased by 1% but Paulaner and its group still managed to strengthen its market position. The company was able to sustain the impressive dynamic growth abroad it has enjoyed over the past few years with an increase of almost 8%. Thus, we can conclude that Paulaner (and more in general Braun Holding International) has been able to manage the impact of the crisis without being strongly affected.

Following the crisis, higher prices for malt, hops and energy, as well as high personnel costs, have increased price pressure on German breweries. To compensate for this steady increase in costs, Paulaner management has taken an unconventional decision in its industry and decided to raise prices for its brands from November 2011. The fact that many competitors have then followed the same strategy can be interpreted as a sign of the price leadership of Paulaner in the national market.

Another relevant managerial move by Paulaner was to sell its shareholding in one of its subsidiaries, the specialist wholesaler Hubauer Getränke & Logistik. The shares in the company and its respective subsidiaries were sold to the beverage wholesaler Trinks Süd, effective by July 2011. This move enabled Paulaner to concentrate on its core business, the brewing of beer and its marketing in Germany and abroad. The sale of the Hubauer Group should not, however, be equated with a fundamental departure from the beverage wholesaling business on the part of Brau Holding International.

At the end of the year, the Paulaner brewery took another important step by taking the decision to move production and logistics to Langwied on the western outskirts of Munich. Paulaner's traditional site in Munich had already reached its maximum capacity, so the relocation was intended to help handle planned growth abroad and the increasing variety of packaging units resulting from the trend towards small units. Paulaner invested an amount in the triple-digit million range in the construction its new brewery in the outskirts of Munich. This investment was also advertised as ecologically-friendly. Investments have been also made in terms of marketing and advertising locally so stimulate internal demand. With its "Paulaner Cup des Südens", the group has created a new promotion centered around its sponsoring of the FC Bayern football team (The Schörghuber Corporate Group, 2012; Covino and Boccia, 2016).

In an overall declining domestic market, BHI launched numerous initiatives to satisfy the requirements of existing growth segments in the market. One of these areas of growth was, for example, the area involving small packaging units. Due to the increasing number of smaller households and the demographic change, smaller packaging units and smaller-sized bottles are becoming increasingly popular. A growth area with particular potential remains the segment for alcohol-free beer. Paulaner Hefe-Weißbier Alkoholfrei enjoyed clear double-digit growth in 2011. Supported for the first time by short TV ads, the product was able to significantly increase its market share, moving from third place in the German market for alcohol-free wheat beer to second place.

Despite the fact that after the crisis large part of the business was related to Germany, the export business started becoming increasingly important to BHI. While domestic sales were stagnant, or on the decline, the company succeeded in further increasing exports by almost eight percent. Asia was also a key growth market for Paulaner. Paulaner foreign organization added new personnel and new delivery structures were created in the USA to increase the strength of the export organization and further investments were made for the Chinese market. In order to build the brand, Paulaner launched an online marketing offensive and created websites in the languages of the key foreign markets.

In 2012 the trend became positive also in terms of national market as a 0.4% increase in sales took place (while +9.7% in foreign market occurred). This is important as the foreign market accounted only for 19% of total business. Then the focus of the management has been on the international expansion towards regions like Asia and the USA where the effects of the crisis were not as long-lasting like in Europe. Between 2011and 2012 sales growth were negligible in Germany and Americas, but they were extremely good in both Europe (+18%) and the Rest of the World (+16%). Hence, it can be that the BHI group managed to survive the crisis by local market policies combined with strategies to expand its foreign market.

In the end, also the Campari group, a major Italian beverage and drinks company, adapted to changing consumer needs and markets changes following the 2008 financial crisis.

Before the eruption of the crisis, also Campari faced a negative trend in its sector generated by a decrease in the spending for restaurant meals by Italian consumers. Given the obvious complementary relation, this generated a negative trend also in the demand for spirit. Then, the negative impact of the financial crisis of 2008 further reduced the individual spending propensity for non-primary goods such as alcohol and spirits. All together since 2005 the Italian spirits market volume reduced by an average of 3.1% per year (Aversa, 2013). Similar trends were experienced also in other European countries. These changes in spending presented difficulties to companies such as Campari facing the task of reversing a negative trend in the demand mainly depending on macroeconomic and preference factors.

Differently than BHI, at the eruption of the crisis Campari was facing also situation of adverse changes in drinking habits in Italy. Italian consumers started looking for lighter drinks that could fit social experiences with little or no food consumption and this was detrimental for the Campari products.

As a result, the strategy of Campari was different when compared to the one of BHI. The choice was directed towards finding a new niche in the market in order to increase income and profits. Campari realized that a growing element of its products arsenal could be a good solution given the new trends in the beverage industry. Since 2003 Campari owned Aperol, an Italian light liqueur that is the main ingredient of the Spritz aperitif cocktail. Campari has heavily invested in promoting it as a drink for aperitivo in order to re-gain what lost due to the crisis and shift in preferences. Thus, Campari management's strategy was to survive the crisis by exploiting the emerging market trends and moving away its focus from restaurants toward cheaper and faster eating occasions. From 2004, the Aperol brand experienced seven years of double-digit growth, reaching peaks of +40% in 2009, just in the second year after the eruption of the financial crisis. Aperol became the best-selling spirit in Italy despite the economic downturn's effect on market demand.

Following the national success of its strategies, Campari tried to extend them internationally, and it is still now tackling markets such as UK, USA, Australia, and Japan. This has been also favoured by the trends in the exchange rate markets given the depreciation of the euro vis a vis other currencies . The change in average exchange rates had a positive impact of 3.8% on sales between 2009 and 2010. In absolute terms, the positive impact of exchange rates was quantifiable at € 38.4 million and mainly related to the Brazilian real and US dollar, which appreciated by 18.7% and 5.0% respectively compared with the average levels for the previous year.

Thus, the other major strategy for the Campari group was to expand in markets where the crisis did not lower business opportunities and in which the exchange rate movements opened new business opportunities. Among these, after the crisis the most significant were the distribution of Sagatiba in Brazil and seven other markets in Latin America, the distribution of other products on the Australian market (commenced in April 2010) and the production and sale of Cinzano in Argentina. These have been strategic moves that opened substantial new business opportunities to Campari.

Contrary to BHI, Campari relies much more on foreign markets. The main contributions to total sales of € 1,163.0 million in 2010 came from the Americas, with 35%, and Italy, with 34%: the Americas overtook Italy for the first time as the Group's biggest market at the end of September 2010. A comparison

between the two markets shows that much faster growth was achieved in the Americas in 2010, due to new acquisitions (6.3%), a positive exchange rate effect (8.7%) and higher organic growth (9.6%) (Gruppo Campari, 2010).

More generally, it is worth noting that the progressive decrease in the proportion of total sales recorded in Italy, which in 2010 was due to the effects of the acquisition of Wild Turkey and C&C, is consistent with the Group's external growth strategy, which targeted – where possible – growth on international markets. Group sales growth in 2012 was determined by the particularly positive results achieved in the Rest of the World, which registered double-digit growth (+19.8%), and in the Americas (+8.8%). The Rest of Europe region also registered highly satisfactory growth overall (+5.5%), although in this case, the overall result was mainly determined by the sharp rise in sales in a very important market, Russia (Gruppo Campari, 2012). Finally, for the first time after 2009, Italy closed a year with a decrease in sales compared with the previous year (-2.9%).

An analysis of the contributions of individual regions at the end of 2012 shows that cumulative sales of the two regions where the Group strengthened its presence partly through major acquisitions (the Americas and the Rest of the world) represented 46% of total sales of the Group. Concurrently, for the first time in the Group's history, Italy's contribution has fell to under 30%.

Thus, given its balanced business strategy between localisation and internationalisation, the case of Campari shows some peculiarities when compared to BHI. Campari management faced strong tensions form the local market, but the strategy was not to act on pricing, advertising and packaging as BHI, but rather to find a new local market niche. At the same time, Campari had a higher degree of internationalisation and this reduced the impact of the global financial crisis and helped smoothing the local market downturns thanks to increased competitiveness. Also, the higher initial level of internationalisation facilitated the required globalising strategy following the EMU economic downturn following the financial crisis and the subsequent EMU crisis.

4. Conclusions

The paper has investigated the links between business performance, managerial practices and the effects of the global financial crisis in the beverage industry. The paper has employed BHI, Campari and Pernod Ricard as case studies. The three big groups based in Germany, Italy and France represent three different business and managerial European entities and have been used in order to show how different managerial strategies have determined the performance during, and after, the crisis. A descriptive analysis based on budget and report data indicates that the degree internationalization of the business has strongly determined both the resilience and performance during the crisis and, most importantly, has called for different managerial strategies to overcome the global economic downturn.

This has been shown by linking the Groups business performance, national and international sales volumes, exchange rates and by taking into account also factors affecting the beverage market demand. International market diversification has smoothed the negative impact of the crisis acting as a risk-diversification tool. The analysis also relied on the integration-responsiveness paradigm to retrieve additional insights. Despite the fact that the beverage industry is considered as mainly localised with low degrees of internationalisation, the industry heterogeneity allowed to choose 3 cases with different degrees of internationalisation.

Among the chosen groups, BHI was the more localised with large part of the business based in Germany. Its management was strongly challenged by the crisis in terms of local responsiveness. As a result of the challenges coming from national market slowdown, BHI management first reacted to the crisis by reducing products prices, strongly investing in sponsorships and marketing, and adjusting to changes in local preferences. Pernot Ricard showed to be on the other extreme of the spectrum given its high degree of internationalisation. In this case, strong internationalisation has acted as an insurance device thanks to risk diversification in business. Then, the strong crisis effects on European markets did not challenge the French multinational very much.

The asymmetric macroeconomic effects of the crisis and the different speed of recovery around the world, combined with the strong international character of Pernot Ricard, allowed this multinational not to be substantially challenged by the crisis. The main managerial reaction was just to increase the, already well established, regional diversification of business. Campari showed to be an intermediate case. The group dealt with the pressure for local responsiveness by finding new market niches but at the same time exploited positive trends thanks to its international exposure to other markets. It can be argued that the Campari management has been able to move towards riskier and more aggressive decisions when compared to BHI thanks to the fact that the good degree of internationalisation provided some risk diversification. Thus, the presented exercise showed how three beverage companies experienced, reacted and survived the crisis in a very different way depending on their level of national localisation and internationalisation.

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Characterization of Nutritional and Mineral Content of Plum and Cherry Waste

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Abstract

The results of the study of the nutritional and mineral content of plum and cherry waste are presented in this article. The analysis found that plum waste contained <0.01% free fat, 0.90% crude protein, 1.10% total dietary fibres, 10.9% carbohydrates (digestible), 8.82% total sugars, 7.18% reducing sugars, 86.6% water content, 13.5% dry matter, 0.48% total ash. Cherry waste is characterized by less than 0.01% free fat, 0.96% crude protein, 1.71% total dietary fibres, 12.7% carbohydrates (digestible), 10.32% total sugars, 10.39% reducing sugars, 84.3% water content, 15.7% dry matter, 0.35% total ash. The content of fifteen chemical elements was examined in both fruit wastes. Potassium content was found to be highest: 1452 mg/kg in the plum waste and 1351 mg/kg in the cherry waste. The second element in content is P (221 mg/kg in the plum waste and 217 mg/kg in the cherry waste), followed by Mg (107 mg/kg and 96.6 mg/kg in the plum and cherry waste, respectively) and Ca (91.3 mg/kg in the plum waste and 93.3 mg/kg in the cherry waste). The results obtained in this study indicate that pathways may be found for further exploration and recovery of plum and cherry wastes, for example, these fruit wastes could be used as a source to extract valuable components.

Keywords: *plum waste; cherry waste; nutritional content; mineral content.*

1. Introduction

Fruit and vegetable wastes possess high perishability and high moisture content (Asquer, Pistis & Scano, 2013). Different management strategies can be successfully applied to fruit and vegetable waste. The extraction of specific functional compounds has been greatly applied in recent years, suggesting that fruit and vegetable waste can be seen as a source of valuable ingredients and products (Plazzotta, Manzocco & Nicoli, 2017). The study of Kuppusamy et al. (2017) confirms that food wastes are rich sources of essential nutrients (Kuppusamy, Venkateswarlu & Megharaj, 2017). Ghinea et al. (2019) determined the physico-chemical parameters of food waste like peel and pomace of some fruits and vegetables in order to develop a model for food waste composting (Ghinea et al. 2019).

Plums (*Prunus domestica* L.) are widely distributed in many countries. During industrial processing, large quantities of pomaces, stones, brandy distillery wastes are produced and discarded. Plum pomaces contain valuable nutrients which can support the growth of microorganisms. Therefore, the exploitation of the nutritive potential of these wastes for the obtaining of different high value compounds is very promising (Dulf, Vodnar & Socaciu, 2016). Dulf and co-authors (2016) investigated the effects of solid-state fermentation with two filamentous fungi on the total phenolic contents, flavonoids, antioxidant activities and lipid fractions of plum by-products (Dulf, Vodnar & Socaciu, 2016). Petre and colleagues (2014) studied a completely new biotechnology for controlled composting of different liquid wastes of tree fruits, including plum wastes (Petre, Petre & Rusea, 2014). González-García and colleagues (2014) developed a method for the extraction of proteins from waste product – plum seeds (González-García, Marina & García, 2014). In another study, González-García and colleagues (2015) fractionated and identified antioxidant and angiotensin-converting enzyme-inhibitory peptides from plum stones (González-García et al. 2015). Their work shows that plum seeds are cheap sources of highly antioxidant and ACE inhibitory peptides (González-García et al. 2015). In other work, González-García and co-authors (2016) recovered and identified proteins from plum and peach seeds (González-García et al. 2016). These seeds are usual residues during canning and beverage production that in most cases are irreversible lost (González-García et al. 2016). Kaur et al. (2018) dehydrated Java plum seed and skin waste using three techniques and analyzed its effect on pigment and antioxidant properties (Kaur et al. 2018). Kosmala and co-authors (2013) investigated the pectins present in plum (*Prunus domestica* L.) fruit, juice and pomace for three plum varieties, and evaluated the potential of plum pomace for the recovery of dietary fibre products (Kosmala et al. 2013). Górnaś and colleagues (2017) studied kernels from plum pits (industrial by-products) of two species *Prunus domestica* L. and *Prunus cerasifera* Ehrh. as potential biodiesel feedstock (Górnaś, Rudzińska & Soliven, 2017). Plum fruit processing industry could be a source of alternative low-cost oily feedstock for biodiesel production. Kostić et al. (2016) investigated the value of waste plum stones as a low-cost resource of fatty oil with a high free fatty acid level that could be utilized in biodiesel synthesis (Kostić et al. 2016).

Most sweet cherries (*Prunus avium* L.) are consumed fresh. They are highly perishable fruit with a short harvest season. The review article of Chockchaisawasdee et al. (2016) provides comprehensive details on nutritional components in sweet cherries and their analysis methods (Chockchaisawasdee et al. 2016). Duman and colleagues (2011) carried out slow and fast pyrolysis of cherry seeds and cherry seeds shells. The results obtained by the authors show that the oil from slow pyrolysis can be used as fuels and the bio-oil from fast pyrolysis can be considered as a source for valuable chemicals (Duman et al. 2011). In the paper of Dziadek and co-authors (2019) has been

noticed that due to the high antioxidant levels, the sweet cherry leaves and petioles can be a source to produce functional food. Further studies are needed to prove processability and usefulness of them in the food industry (Dziadek, Kopeć & Tabaszewska, 2019).

Cherry pomace, a solid waste or by-product of cherry juice production, consists of cherry skin and seeds. It accounts high quantities of lignin, cellulose, dry fibre components and it is rich in health beneficial anthocyanins (Greiby et al. 2017; Nawirska and Kwaśniewska, 2005). Greiby et al. (2017) estimated the kinetic parameters for anthocyanins in cherry pomace at three constant moisture contents and different time-temperature combinations. Dried cherry pomace is becoming a premium ingredient for food applications (Greiby et al. 2017). Grigoras and colleagues (2012) studied the feasibility of developing a human health and environmental friendly process to isolate anthocyanins from sweet cherries. Their results promote this process to use sweet cherries as natural anthocyanins source (Grigoras et al. 2012). Tumbas Šaponjac et al. (2016) encapsulated sour cherry pomace extract in whey and soy proteins and incorporated in cookies (Tumbas Šaponjac et al. 2016). Yılmaz et al. (2015) described an optimized extraction conditions of phenolic compounds from sour cherry pomace which is a byproduct of juice processing (Yılmaz, Karaaslan & Vardin, 2015). In their review article, Yılmaz and colleagues (2018) focused on the chemistry and functional properties of sour cherry peel and pit with their utilization in food industry (Yılmaz et al. 2018). Li Destri Nicosia et al. (2016) studied the efficacy of pomegranate peel extract in controlling different postharvest rots of citrus, apples and sweet cherries (Li Destri Nicosia et al. 2016). In their review, Ordoudi and co-authors (2018) discussed how the stone and seed wastes generated during the processing of tree fruits in various regions in Greece, including cherries as stone fruits, can be valorized (Ordoudi, Bakirtzi & Tsimidou, 2018).

Nowicki et al. (2015) established that cherry stones can be used as a precursor for the preparation of activated carbons by physical and chemical activation (Nowicki, Kazmierczak & Pietrzak, 2015). Pap et al. (2017) used plum stones as a precursor for obtaining of a low-cost activated carbon, which has significant adsorption affinity for heavy metals and organic pollutants with possible application in the wastewater treatment (Pap et al. 2017). Pap and colleagues (2018) prepared highly-efficient functionalized biochars from plum and apricot kernel biomass to capture lead and chromium from aqueous solutions (Pap et al. 2018). Parlayıcı and Pehlivan (2017) prepared activated carbon from plum stone by inserting phosphoric acid and then modified by a magnetic material. This activated carbon could be used as an active adsorbent for the removing of metal ions from aqueous solutions (Parlayıcı and Pehlivan, 2017). Vukelic et al. (2018) confirmed that the production of activated carbon from waste cherry and sour cherry kernels is feasible (Vukelic et al. 2018). Wiśniewska and colleagues (2017) investigated the adsorption properties of activated carbon obtained by direct activation of cherry stones (Wiśniewska et al. 2017). Zając and colleagues (2018) analyzed the chemical composition of ashes from the combustion of various types of biomass, including cherry pits (Zając et al. 2018).

The purpose of this article is to investigate the approximate nutritional and mineral content of plum and cherry wastes. Establishing this composition would make it possible to find ways to further explore and utilize this waste, for example, to use these fruit wastes as a source to extract valuable components.

2. Materials and Methods

Soft, rotten, non-edible parts of plums and cherries considered plum and cherrie waste were used as experimental material in this study. The samples tested were purchased from the local market. The analyses were performed in the SGS Bulgaria Ltd, Laboratory Varna. Plum and cherry wastes were examined for the following indicators: free fat (according to BDS 6997:1984), crude protein (according to BDS ISO 1871:2014), total dietary fibres (according to AOAC 985.29:1986), carbohydrates (digestible) (according to VLM 106:2012), total sugars (according to BDS 7169:1989), reducing sugars (according to BDS 7169:1989), water content (according to ISO 1026:1982), dry matter (according to ISO 1026:1982), total ash (according to BDS 7646:1982), mineral composition (according to VLM 40: 2009). Well-described methodologies can be found in this work (Baloch, Xia & Sheikh, 2015).

3. Results and Discussion

The results of the analyses performed in this study on the nutritional and mineral content of plum and cherry wastes are presented in Table 1 and Table 2.

The both fruit wastes tested are characterized by high water content: 86.6% in the plum waste and 84.3% in the cherry waste. This confirms the research of other authors on the fact that waste of fruits and vegetables are characterized by high water content (e.g., Ghinea et al. 2019). The dry matter content is 15.7% in the cherry waste and 13.5% in the plum waste. The total ash indicator has a higher value in the plum waste (0.48%) than in the cherry waste (0.35%).

Parameter, %	Plum waste	Cherry waste
Free fat	<0.01	<0.01
Crude protein	0.90 ± 0.15	0.96 ± 0.15
Total dietary fibres	1.10 ± 0.20	1.71 ± 0.20
Carbohydrates (digestible)	10.9 ± 1.6	12.7 ± 1.9
Sugars (total)	8.82 ± 0.25	10.32 ± 0.25
Sugars (reducing)	7.18 ± 0.25	10.39 ± 0.25
Water content	86.6 ± 0.3	84.3 ± 0.3
Dry matter	13.5 ± 0.3	15.7 ± 0.3
Total ash	0.48 ± 0.01	0.35 ± 0.01

Table 1. Nutritional content of plum and cherry waste

Félex de Oliveira and colleagues (2014) investigated physicochemical and nutritional properties of peels of plum, nectarine and grape. Some of the studied parameters are moisture, ash, protein (Félex de Oliveira et al. 2014). In their work, Fernandez and co-authors (2019) investigated the kinetics of the steam-assisted gasification for three agro-industrial solid wastes: plum pits, olive pits and sawdust. One of the determined parameters of proximate and ultimate analysis is ash of plum pits (Fernandez et al. 2019). In the paper of Duman and co-authors (2011) have been presented the proximate, ultimate and component analyses of cherry seed and cherry seed shell (Duman et al. 2011).

In both fruit wastes, the free fat content was lower than 0.01%. Compared to free fat, crude protein has a higher content: 0.90% and 0.96% for the wastes of plum and cherry, respectively. The content of total dietary fiber is higher in the cherry waste (1.71%) than that of the plum waste (1.10%).

Dietary fibres have beneficial physiological effect on human and animal organisms (Nawirska and Kwaśniewska, 2005). Nawirska and Kwaśniewska (2005) determined the amounts of particular dietary fibre fractions in cherry pomace and other wastes from fruit and vegetable processing (Nawirska and Kwaśniewska, 2005). Basanta et al (2014) isolated and characterized fibres from cherry fruits discarded at harvesting (Basanta et al. 2014). In the paper of Dziadek and colleagues (2019) have been presented results of dietary fibre and selected bioactive compounds content in leaves, petioles and fruit of sweet cherry (Dziadek, Kopeć & Tabaszewska, 2019). In their review article, Maurya et al (2015) discussed the potential of the most important by-products of plant food processing, including cherry pomace, as a source of dietary fibre (Maurya et al. 2015).

Digestible carbohydrates have higher values: 12.7% and 10.9% for the waste from cherry and plum, respectively. The amount of total and reducing sugars in cherry waste is predominant: respectively 10.32% and 10.39% versus 8.82% and 7.18% in the plum waste. In the review of Chockchaisawasdee and co-authors (2016), it is noted that sugars are important for quality of sweet cherry fruits as they are balanced with acid in the fruit to contribute the flavour (Chockchaisawasdee et al. 2016).

It is noteworthy that of the tested fifteen chemical elements with the highest content is potassium: 1452 mg/kg and 1351 mg/kg in the plum waste and the cherry waste respectively. The second content element is P (221 mg/kg in the plum waste and 217 mg/kg in the cherry waste), followed by Mg (respectively 107 mg/kg and 96.6 mg/kg for the waste of plum and cherry) and Ca (the quantities for plum waste and cherry waste are respectively 91.3 mg/kg and 93.3 mg/kg). The results of the study show that the tested plum and cherry waste could be used as a source of potassium, phosphorus, magnesium, calcium.

Sulfur is the next element in quantitative content, with 90.9 mg/kg in cherry waste and 70.8 mg/kg in plum waste. The content of the elements boron, manganese and zinc is higher in plum waste (respectively 2.64 mg/kg, 1.55 mg/kg and 1.25 mg/kg) than in cherry waste (respectively 1.81 mg/kg, 0.74 mg/kg and 0.48 mg/kg). The element iron has almost twice as much content in cherry waste (3.35 mg/kg) than in plum waste (1.89 mg/kg). The content of the element Cu (1.52 mg/kg) is also more prevalent in cherry waste compared to plum waste (0.89 mg/kg).

Parameter, mg/kg	Plum waste	Cherry waste
B	2.64 ± 10 rel.%	1.81 ± 10 rel.%
Na	1.10 ± 10 rel.%	1.02 ± 10 rel.%
Mg	107 ± 5 rel.%	96.6 ± 10 rel.%
Al	0.74 ± 15 rel.%	0.73 ± 15 rel.%
P	221 ± 5 rel.%	217 ± 5 rel.%
S	70.8 ± 10 rel.%	90.9 ± 10 rel.%
K	1452 ± 5 rel.%	1351 ± 5 rel.%
Ca	91.3 ± 10 rel.%	93.3 ± 10 rel.%
Cr	<0.05	<0.05
Mn	1.55 ± 10 rel.%	0.74 ± 15 rel.%
Fe	1.89 ± 10 rel.%	3.35 ± 10 rel.%
Cu	0.89 ± 15 rel.%	1.52 ± 10 rel.%
Zn	1.25 ± 10 rel.%	0.48 ± 15 rel.%
Se	<0.05	<0.05
Mo	<0.05	<0.05

Table 2. Mineral content of plum and cherry waste

The both wastes analysed have a comparable content of the elements Na (1.10 mg/kg and 1.02 mg/kg in the waste of plum and cherry, respectively) and Al (respectively 0.74 mg/kg and 0.73 mg/kg in plum waste and cherry waste). In both wastes, the content of Cr, Se and Mo was lower than the detectable minimum (<0.05 mg/kg).

The results are comparable to those obtained by Kuppusamy et al. (2017). In the article by Kuppusamy and co-authors (2017), nineteen food waste for important and toxic elements were investigated. One of these wastes is a plum pomace. The results obtained by the authors are as follows: 11.5 mg/g K, 1.2 mg/g P, 0.2 mg/g Ca, 0.4 mg/g Mg, 0.1 mg/g S, 0.6 mg/g Na, 2.8 mg/kg Mn, 2.3 mg/kg Cu, 9.0 mg/kg Fe, 2.4 mg/kg Al (Kuppusamy, Venkateswarlu & Megharaj, 2017).

4. Conclusions

In examining the nutritional and mineral content of plum and cherry wastes in this article, it was found that both fruit wastes can be used as a source to produce some valuable components. Potassium content was found to be highest: 1452 mg/kg in the plum waste and 1351 mg/kg in the cherry waste. The second element in content is phosphorus (221 mg/kg in the plum waste and 217 mg/kg in the cherry waste), followed by magnesium (107 mg/kg and 96.6 mg/kg in the plum and cherry waste, respectively) and calcium (91.3 mg/kg in the plum waste and 93.3 mg/kg in the cherry waste).

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The Management of Health Insurance Rights for Indonesian Migrant Workers Abroad in the Perspective of the Constitutional Rights of Citizens

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Abstract

Indonesia is a country which protects and respects the human rights in all aspects of life. The human right is a basic right of human beings which is regulated in the constitution. The granting of health insurance is an effort to make the citizens reach prosperity. The concept of state welfare does not only include the description of the method in organizing welfares or social services, yet it is also a normative concept or a system of ideal approach which emphasizes the fact that every citizen must receive their right to social services. The protection of social insurance for Indonesian citizens is stated in the Mandate of the 1945 Constitution, article 28 H paragraph 3.
Apart from that, the granting of social insurance for migrant workers are regulated in the Constitution No. 18 year 2017 on the protection of Indonesian migrant workers, which regulates the existence of health insurances for the migrant workers before, during, and after having worked overseas. Since there are still undergoing problems which inhibit the management of the social insurance grants for the citizens, automatically, the social insurances for Indonesian migrant workers overseas cannot be executed optimally. Each Indonesian migrant worker abroad has the obligation to pay for the social health insurance contributions. In its implementation, the migrant workers cannot receive facilities from that health insurance, which is an element of the constitutional rights.

Keywords: *management; health insurance; migrant workers; constitutional rights.*

1. Introduction

The human right is a substance of a modern country's constitution script, as well as the citizens' rights and obligations, which are some of the elements regulated in the constitution, parallel to the modern country's constitution. The human right is a set of rights which cannot be separated from the existence of every human being as a creation of God the Almighty, as well as His blessing which must be respected, which must be held high, and which is protected by the state, the law, the government, and every person, for the sake of honor and protection of the human dignity.

The human right is a basic right of human beings which are regulated in the constitution. The rights which are regulated in the constitution are barriers which must not be crossed by organizers of the state, both for the citizens who are within the country's territory, as well as those who are currently overseas. A state is an organization which has an aim. Its aim is written in the fourth paragraph of the Republic of Indonesia's 1945 Constitution Preamble, which identifies the Republic of Indonesia as a state of law, which its aim is to reach common welfare. Each activity must be oriented to the aim and must be based on the law which is applied as a regulation of stately activities, both in the government and in the society. To reach the mentioned national aim, thus, a continuous development which is a part of a comprehensive development must be done, which is directed, integrated, and which in it includes the development of health (Sandiata, 2013).

Health is a vital aspect of the human rights. As a part of the human rights, the right for health is a right which is fixed upon an individual. It is a part of his/her right having been born as a human being, and it is neither given by an individual nor a state, therefore it cannot be withdrawn or trespassed by anyone (Sofyan, 2009). Health is an important factor of the state in terms of development, which includes healthy and educated human beings. A healthy society may act upon different things to reach a prosperity in life, whereas an unhealthy society will experience lateness in all aspects of life. Health is positioned on the first rank of human development; thus, health is accepted globally as a part of the human rights. The World Health Organization (WHO) 1948 Constitution states that it is the right of every human being to achieve the highest degree of health (Mudakir, 2011). In its essence, the aim of the Indonesian citizens' health insurance is to increase the awareness, the desire, and the ability to live healthily as an investment to develop productive human resources both economically as well as socially.

The concept of social insurance in a wider sense includes all

efforts in the aspect of social welfare, to increase the human standard of living in resolving underdevelopment, dependency, neglect, and poverty (Budiono, Absori, Ngestiningrum, & Nugroho, 2018). This concept cannot yet be optimally implemented in Indonesia, as there is a governmental limitation in the payment sector, and that there is a sectoral egoism of some parties which have certain interests in social welfare (Komariah, 2015).

The concept of social welfare is usually based on the principle of the similarity in opportunity, the equal distribution of income, and the responsibility of the state towards the citizens who do not have the ability to pay for their own minimum needs to receive worthy health services; or namely the weak groups (McLean & McMillan, 2009). Based on the discussed problem, thus the research problem in this study is, "How is the management of health insurance rights for the Indonesian migrant workers abroad in the perspective of the constitutional rights of citizens".

2. Research Methods

This study uses a descriptive research method, which describes the management of health insurance for migrant workers. This research is also a prescriptive study, which aims to offer solution towards the problems in the theoretical examination. This research is the connector between the essence and the reality of health insurance for migrant workers based on the citizens' constitutional rights.

3. Results and Discussion

The management of health insurance is a concept of social protection which is adopted from different social protection concepts, which is a public effort to face fragility and poverty, which is completed with a strategy to achieve comprehensive welfare for all citizens (Habibullah, 2017).

Basically, there are some important aspects regarding to the fulfillment of constitutional rights and law protection to achieve the program of BPJS (*Badan Penyelenggara Jaminan Sosial*/ Social Security Administrator).

First, the mandate of the constitution, which is the Republic of Indonesia's 1945 Constitution Preamble states that the state's noble vision is to ensure the welfare of its citizens. It is also reflected in Pancasila's fifth principle, which says, "Social justice for all Indonesian citizens". The body of the 1945 Constitution also contains some articles which became the basis of why BPJS is necessary, parallel with the Constitution No. 24 year 2011 on BPJS (Rahman, Pujianti, Anhar, & Sari, 2015).

Article 28 H paragraph (1) clearly states that social welfare is the right of every human being. In article 34 paragraph (1), it has again mentioned the constitutional basis on why a social security system is necessary. The next constitutional basis is the Constitution No. 4 year 2004 on the National Social Insurance System, with the aim of developing a comprehensive system and to give security in a wider sense.

Second, in the aspect of civil needs, social welfare is a necessity of the citizens. Social insurance is needed comprehensively and without fragmentation. The citizens' different levels of accessibility, which are caused by the different levels of economic strength, geographical condition, and the condition of facilities, encourages the need of the same insurance for all individuals. This insurance is needed because all individuals have the chance to be categorized as citizens with a fragile condition, who will face social risks in their lives. The health insurance protection program in Indonesia is designed for all citizens.

In line with the mandate of the Republic of Indonesia's 1945 Constitution Article 28 H paragraph (3) which states that: "Every citizen have the right of obtaining social welfare, which creates a comprehensive self-development possible as a dignified human being" and also Article 34 paragraph (2) which states that: "*The state develops a Social Security System for all civilians and empowers the weak and the unable citizens according to the human dignity.*"

The problems which arise are:

Problems which currently arise in the healthcare delivery system in this country are as follows:

1. Rejection of poor people in healthcare service facilities. The Governmental Regulation No. 101 year 2012 on the Receiver of Health Insurance Contribution Aid, the Presidential Decree No. 111 year 2013 on health insurance only accommodated 86.4 million poor and needy citizens as Receivers of Health Insurance Contribution Aid, whereas according to BPJS, there are 96.7 million poor and needy citizens. The execution of BPJS year 2014 is supported by governmental funds in the sum of Rp. 26 billion which was funded by the 2014 RAPBN (*Rencana Anggaran Pendapatan dan Belanja Negara*/ Draft State Budget and Expenditures). These expenditures are used for *Penerima Bantuan Iuran* (PBI/ Receivers of Health Insurance Contribution Aid) in the sum of Rp. 16.07 billion for 86.4 million poor people, whereas the rest are used for civil workers, the military and the police officers. The government must quickly draft the health funds in the sum of Rp. 400 billion for homeless people, street children, inhabitants of orphanages, inhabitants of nursing homes, and prisoners (there are 1.7 million people in total). Thus, the number of the poor and the needy whose healthcare needs are covered by BPJS health must be increased to 96.7 million.
2. Street children and people with mental disorders are the responsibility of the country or the regional government, so for those who own identity cards (KTP – personal identity cards and KK – family identity cards) will be given cards which identify their status as poor and needy people. Yet, for displaced children and people with mental disorders who do not have identity cards, their data will be registered by the local authorities of the Social Service and they are responsibilities of the government through the Social Department. The technical execution is referenced on the BPJS Constitution or the regional regulations.
3. The Community Health Centers (*Pusat Kesehatan Masyarakat*/*Puskesmas*) or hospitals, in their execution of health services which are presently held in the field are still problematic. Patients must seek rooms from one hospital to the next as they are said to be full by the hospitals. This is not a recent nor an uncommon issue.
4. The services in the Community Health Centers or in the hospitals, the patients must wait in a long queue. They must wait in registering themselves and also in taking their medicine.
5. Not every medicine is covered by BPJS. There are complaints from the poor and needy who must bear the cost of buying expensive medicines, so they are incapable of purchasing them.

The protection of social insurance for migrant workers overseas are given by BPJS, as is stated in the mandate of the 1945 Constitution, Article 28 H paragraph 3. It is also regulated in the Constitution, No. 18 year 2017 which regulates the existence of health insurance for migrant workers before, during, and after having worked abroad. If there are still problems arising in the country which inhibit the execution of social insurance grants for the citizens, automatically, the social insurances for Indonesian migrant workers overseas can't possibly be done optimally. Each Indonesian migrant worker overseas has the obligation to pay for health and social insurance contributions, yet factually, they cannot receive facilities from their health rights, which is an element of the citizens' constitutional right.

The Ideal Fulfillment of the Citizens' Constitutional Rights in the Future on the service of BPJS health have a target in its execution. It is hoped that there will be operational sustainability by giving benefits to all those who are involved in BPJS, both within the country or overseas, the fulfillment of the participants'

medical needs, and care as well as transparency in the management of BPJS funds.

The government has the obligation to profoundly take care of the execution of the healthcare delivery system, the healthcare payment system, and the healthcare quality system. Taking note that the execution of BPJS is issued through the Constitution as the regulator, whereas the determination of implementation process is strengthened by the authorized state officials' decree, like the governmental decree or the presidential degree. There are at least 10 derived regulations which must be made to strengthen the execution of BPJS.

The experiences of both developed and developing countries show that even though the market mechanism may create economic growth and optimum work opportunities, they always fail in creating even incomes and in eradicating social issues. The poor, the needy, and citizens with social welfare issues are those who are untouched by the development strategies which are dependent on market mechanism. This vulnerable group, because of their physical disability, their culture (as isolated tribes), or their structural condition (unemployment), cannot respond to the social changes around them fast enough, thus they are marginalized by an unjust development.

The Fulfillment of Constitutional Rights for Citizens Based on Article 28H Paragraph (3), of the Republic of Indonesia's 1945 Constitution in the future is that each citizen's social security is ensured by the state without differentiating social statuses, tribes, religions, races, and groups, thus the social security is a responsibility of the government to protect their citizens from poverty, health conditions as well as disasters. This is what is called Baldatun *warofun ghofur*, which means it is parallel with the Republic of Indonesia's vision which is written in Pancasila and the Republic of Indonesia's 1945 Constitution Preamble which is Just and Prosper.

The execution of the health insurance management for Indonesian citizens need an awareness towards Legal Compliance, so there is support between one and another to succeed in executing health insurance. What should be done include repairing the health insurance management accuracy such as in keeping an updated data of participants. There needs to be a continuous monitoring to verify and to validate the data of participants, and also to synchronize data from the Ministry of Foreign Affairs, so that valid data on the Indonesian migrant workers overseas are available. This is so that there is neither double participation nor the neglect of citizens who actually have the right to obtain contribution aids.

Regulation, the BPJS Health must undergo a revision of regulation, so that there are strict sanctions for the regional governments and the related institutions which do not support the health insurance program. Apart from that, the quality of the human resources must be increased to encourage the formation of professional human resources who will give the best health services for the Indonesian citizens. More importantly, in terms of health service funds, the government should make sure that the social security funds are according to the need, so that the execution of this program will not cause problems which can actually be predicted from the beginning. The government can also imitate the management of health service funds by the Malaysian government, who has had a higher awareness in the health sector.

4. Conclusion

Health is an important factor for the Republic of Indonesia, as one of the factors in the development of a country includes healthy and educated human beings. A form of the state's responsibility towards the citizens' health is the obligation of each citizen to participate in health social security through BPJS. The management of health rights insurance, which is a form of the state's protection towards its citizens, still have issues in this country. The execution and the fulfillment of health insurances in Indonesia cannot yet be done optimally, thus automatically, the state's fulfillment in granting social securities for its citizens who work overseas can neither be done well. The management of health insurances needs an awareness towards law compliances, verification and data validation of participants and the synchronization of data from the Ministry of Foreign Affairs, so there is a valid data on the Indonesian citizens who work overseas, to avoid double participation or conversely the neglect of citizens who actually have the right to receive contribution aid as a part of the citizens' constitutional right. With a good management, there needs to be both clear and strict sanctions for regional governments and the related institutions which do not support the health insurance program.

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Artificial Intelligence and Cyber Security – A Shield against Cyberattack as a Risk Business Management Tool – Case of European Countries

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Abstract

The business process is changing now. We are already in digital era, and this is a constant challenge. Today the most valuable thing is not currency or gold, is data. How vulnerable are businesses to computerization? 100%. Internet is a virtual space available for everyone. Storing data on any device that can be connected to the internet can become vulnerable in any given second. This article comes to show how we can combine and use artificial intelligence and cyber security to protect our business against cyberattacks, presenting in the same time cases of risk management form different European countries.

Keywords: *cyber security; cyberattack; artificial intelligence; risk management; business environment.*

1. Introduction

Dispute cyberattacks become the first threat for business, which usually come with financial repercussions. Many companies from around the world started to use Artificial Intelligence in their business process, because it helps companies to reduce operating costs, boost productivity and deliver the ultimate customer experience. Artificial Intelligence is one of these game-changing tools for business. However, other companies are still shy in integrating and using Artificial Intelligence and new technologies for various reasons, mainly due lack of knowledge, and/or lack of resources (Marketingcharts, 2017). For those companies which started to use Artificial Intelligence the business process and financial results already improved. These new technologies helped them. However, in the same time, Artificial Intelligence imply to have a centralized database for clients, for individual and business information with same characteristics. This is helpful on one hand, but on the other hand can be a huge exposure for cyberattack. In this respect, along with Artificial Intelligence, businesses have to implement and use also cyber-security tools. Cyberattacks are usually aimed at accessing, changing, or destroying sensitive information; extorting money from users; or interrupting normal business processes. In other words, risk management includes now another category: cyber-attack risk, which can be protected through cybersecurity. In other words, the antidote for this type of risk is cybersecurity, which comes as a practice of protecting systems, networks, and programs from digital attacks (Moşteanu, N.R., Galea, K., 2019).

2. Research methodology

The present work paper is a qualitative exploratory research, based on investigative techniques. It is a fundamental research, which aims to identify the threat of using artificial intelligence for business, being possible to be vulnerable by cyberattack, and give possible solutions to manage this risk through cyber-security. The investigation starts from European companies, which are using or willing to use Artificial Intelligence in their daily operations and continue with cases about cyber-attack and their financial losses. The research paper comes to present how cyber security can use artificial intelligence to create a safer business environment.

3. Literature review

3.1. History of Cyber security

Cyber security, a concept that arrived on the post-Cold War agenda in response to a mixture of technological innovations and changing geopolitical conditions (Hansen, L., Nissenbaum, H., 2009). The term cyber security is often used interchangeably with the term *information security* (Von Solms, R., Van Niekerk, J., 2013). The Cyber security history issues begins in 1970s with a project called *The Advanced Research project Agency Network* (ARPANET). The program appeared inside the project and was named *Creeper* fallowing the printed massages left behind: *I'm the Creeper: Catch m if you can* (Murphey, D., 2019). That was the world's first hacker. Once the internet starts to be open to the public (1990s), more and more people started to use computers, and add their personal information on them and sharing it on the internet too. This was the time when organized crime entities took this opportunity get more financial resources, stealing data and money from individual, businesses and governments. By mid of 1990s, in order to protect the people and the government against all this whipped, NSA create the first *firewall*.

Over the year, due to the continue improving the technologies, hacking become more complicated. New and new cases of cyber-attack risen, such as: *Snowden & The NSA*, 2013 (a former CIA copied and leaked classified information from NSA); *Yahoo 2013-2014* (hackers broke into Yahoo, jeopardizing the accounts and personal information of all their 3 million users); *WannaCry, 2017* (known as *ransomworm* – targeted computers running the Microsoft Windows operating systems and demanded ransom payments in the Bitcoin crypto-

currency), (Murphey, D., 2019). All this was possible because, while there are significant advances in information technology and infrastructure which offer new opportunities, cyberspace is still far from completely secured. Currently, in many cases, the employed security solutions are ad hoc and lack a quantitative decision framework (Shiva, S., Roy, S., Dasgupta, D., 2010).

In the present time, cyber-attack can have many faces (figure no. 1): phishing; ransomware; malware; and, social engineering (CISCO, 2019).

- *Malware* is a type of software designed to gain unauthorized access or to cause damage to a computer.
- *Social engineering* is a tactic that adversaries use to trick you into revealing sensitive information. They can solicit a monetary payment or gain access to your confidential data. Social engineering can be combined with any of the threats listed above to make you more likely to click on links, download malware, or trust a malicious source.
- *Phishing* is the practice of sending fraudulent emails that resemble emails from reputable sources. The aim is to steal sensitive data like credit card numbers and login information. It is the most common type of cyber-attack. You can help protect yourself through education or a technology solution that filters malicious emails.
- *Ransomware* is a type of malicious software. It is designed to extort money by blocking access to files or the computer system until the ransom is paid. Paying the ransom does not guarantee that the files will be recovered, or the system restored.

In the present life, there are also many other types of cyber-attack, used for obtaining access to the system, like: brute force; and, man-in the middle (Study.com., 2019); Rootkit, DoS/DDoS, Botnet, Evil Twins, Keylogger, RAT, AdWare, Malvertising, Spam, Spyware, Virus, Worm, Trojan, Vishing, Watering Hole, Backdoor, Spoofing, Honeypot, Cyber espionage (Hackout, 2019).

- *Man-in-the-Middle* is a cyber-attack where the data to be exchanged between communicating parties is compromised by an attacker. The attacker gains access to the communication and changes part or all the data, thereby impersonating the communicating parties. The users remain unaware of the intrusion by the attacker.
- *Brute Force* is a cyber-attack where the attacker tries guessing system access credentials like passwords by trying different character combinations until a correct combination is identified.
- *Rootkit*. One of the most powerful types of exploitation because it allows hackers access to the infected device without any problem. Once installed, the rootkit has the power to install keyloggers, ransomware, worms, trojans, and can launch other types of attacks.
- *DoS/DDoS* is an attack on a computer or network designed to reduce, restrict or prevent access to the resources of legitimate users.
- *Botnet*. Following an attack, hackers convert the attacked devices (laptop, desktop, mobile phone or IoT device) into a device that accepts commands from the hacker to perform actions on behalf of the hacker.
- *Evil Twins* is the attack by which a hacker creates a wireless network similar to an existing one. This clone network will emit a stronger signal than the original one and will attract users to connect to this infected wireless. This technique is most commonly found in public spaces.
- *Keylogger* is an application that runs in the background and keeps track of all orders placed on the affected device. They have evolved to the point where they can video record all the actions performed or make printscreen on the affected devices.
- *RAT* is another type of malware that has a backdoor to obtain administrator rights on the affected system. These are exploited by phishing methods that allow hackers access to the system when running the infected program.
- *AdWare* is a type of malware that aims to display anonymous ads to generate profit for the hackers who created it. These are the most common ones in the form of extensions for browsers but also executable files.
- *Malvertising*. Similar to AdWare, these ads are targeted to a target, and when the user in question clicks on that ad, it will download malware that will be installed on the device on the target computer.
- *Spam* consists of sending anonymous emails from sources, anonymous, to people who are not targeted by the information in that email. Spam can become a method by which phishing can be successfully executed.
- *Spyware* is a type of malware whose main purpose is to spy on the device but also to steal personal data.
- *Virus* is a malware that as soon as it infects a device, it changes the way certain applications work. Based on the changes, viruses have the ability to propagate themselves without the need for an orchestrator of actions such as trojans or malware. Their purpose is a destructive one because it changes the architecture of an executable.
- Worm is the brother of the Virus and aims to insert new code into an existing software. Following the changes made, he has the ability to propagate alone without the help of an orchestrator.
- *Trojan* is another type of malware that claims to look like an official application. Hackers use Trojans to infiltrate targeted devices using social engineering techniques, tricking targeted users to download the Trojan. As soon as it is run, the hacker's access is allowed in the affected device.
- *Vishing* is an attack represented by telephone fraud or audio messages left in the voice mailbox, which have the purpose of revealing personal information.
- *Watering Hole* is represented by infecting a site that is accessed by a particular person. Most often, this attack is targeted at user groups, and the purpose is to lure users into this trap to be infected with malware.
- *Backdoor* is the attack when the malware goes through the normal authentication procedure, using certain remote-control commands, hackers can assign remote tasks to the affected system.
- *Spoofing* is any action that hides the source from which it was performed. Hackers use these methods to hide their identity and become difficult to track.
- *Honeypot* is a system that is given as an application but is actually a trap. Honeypot systems are designed to work on bait type. They keep track of all access attempts, information that is useful to security engineers to prepare for the attack itself.
- *Cyber espionage* is focused on large companies and governments. The main purpose is to steal information from within the network or to simply cause damage.

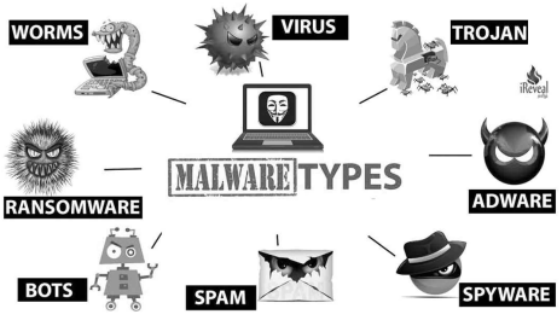

Figure 1. Types of cyber-attacks
Source of the picture:
https://www.youtube.com/watch?v=Xx9LmiCcz0w

With the advances in information technology, criminals are using cyberspace to commit numerous cyber-crimes. Cyber infrastructures are highly vulnerable to intrusions and other threats. Physical devices and human intervention are not sufficient for monitoring and protection of these infrastructures; hence, there is a need for more sophisticated cyber defense systems that need to be flexible, adaptable and robust, and able to detect a wide variety of threats and make intelligent real-time decisions (Dilek, S., Çakır, H., Aydın, M., 2015(). During the journey of this present research, we consider that Artificial Intelligence can and will play an important role in cybercrime detection and prevention.

Bottom line, from the literature review, the research can sustain that, cybersecurity is the practice of protecting systems, networks, and programs from digital attacks. These cyber-attacks are usually aimed at accessing, changing, or destroying sensitive information; extorting money from users; or interrupting normal business processes (CISCO, 2019).

A successful cyber security approach has multiple layers of protection spread across the computers, networks, programs, or data that one intends to keep safe. In an organization, the people, processes, and technology must all complement one another to create an effective defense from cyber-attacks.

3.2. History of Artificial Intelligence

The history of *Artificial Intelligence* started around 100 years ago, in 1920, when Czech writer Karel Čapek published a science-fiction piece called Rossumovi Universal Robots, which introduced the word *robot*, a humanoid *machine* which work for people (Turing, A., 1950). In 1950, Alan Turing (mathematician, computer scientist, logician and cryptanalyst) asked himself (publicly) *Can machines think?* (Koistinen, A.K., 2016), and from this question the *Artificial Intelligence* started its journey. Turing continued to develop three distinct strategies that might be considered capable of reaching a thinking machine: through programming; ab initio of machine learning (Koistinen, A.K., 2016); and, knowledge management (using logic, probabilities, learning skills). As a result of discoveries in neurology, information theory and cybernetics in the same time, researches, and with them Alan Turing, created the idea that it is possible to build an *electronic brain*. Turing introduced his widely known Turing Test, which was an attempt to define machines' intelligence. The idea behind the test was to call machines (e.g. a computer) *intelligent*. If a machine (A) and a person (B) communicate through natural language and a second person (C), a so-called elevator, cannot detect which communicator (A or B) is the machine (Schultebraucks, L., 2018). Moreover, the research continued. On 11 May 1997 IBM's chess computer defeated Garry Kasparov after six games. In the last two decades, *Artificial intelligence* has grown heavily. The *Artificial Intelligent* market (hardware and software) has reached $9 billion in 2018 and the research firm IDC (International Data Corporation) predicts that the market will be $47 billion by 2020. This all is possible through knowledge management to explore *Big Data* and take advantage of faster computers and advancements in machine learning techniques (Moşteanu, N.R., 2019a).

The digital revolution is changing the way of living, working and communicating. New technologies have a major impact on the surrounding world with the continued improvement of digital technologies. Artificial Intelligence is one of them. Artificial Intelligence platforms radically transform businesses processes by combining Machine Learning, with Big Data technologies and advanced algorithms. It is a recent technological breakthrough, which, combined with industrial technology, it helps overcoming many human errors, exceeding human performance in different areas. IT programs are becoming more accurate, detecting and scaling objects better than human performance. Speech recognition systems can now identify the language of telephone calls and voice recordings with levels of accuracy that match human abilities (Moşteanu, N.R., 2019a). Translating from one language into another is now done in real time, using a simple application on the phone. Glasses can be connected directly to google map or another search program. All of these are already part of our lives (Moşteanu, N.R., 2019b). *Artificial Intelligence* solutions have the potential to transform such diverse and critical areas as education, research, healthcare, finance, accounting, auditing, transport and energy. It is not a single technology but a family of technologies (Moşteanu, N.R., 2019c). In addition, *Artificial Intelligence* solutions can help sustainable, rapid and viable regional development. The regional economic disparities that exist in different areas of the world can be diminished considerably. Therefore, *Artificial Intelligence* can help to successfully implement regional development policy objectives (Moşteanu, N.R., 2019d), regardless the geographical area, the spoken language or the sectors of predominant activity.

Artificial Intelligence is taking the financial services industry by storm. Almost every company in the financial technology sector has already started using Artificial Intelligence to save time, reduce costs, and add value. Robo-advisors track account activity using Artificial Intelligence capabilities to analyze and understand how account holders spend, invest and make financial decisions, so they can customize the advice they give their customers. Many banks have prioritized strategic technological advancement by investing in Artificial Intelligence applications to better serve their customers, improve performance, and increase revenue (Sigmoidal, 2019; Moşteanu, N.R., AlGhaddaf, C., 2019).

Over the years, global technology has evolved, we have switched from television, radio and newspapers to the Internet, and now we are slowly and gradually adapting to *artificial intelligence*. Artificial Intelligence processes are more effective in identifying data models than in people, which is beneficial for companies to understand the target audience and gain an understanding of how to perceive the financial services they offer. For thousands of companies around the world, Artificial Intelligence has become the next tool to improve the performance of the financial industry.

The service and financial industry are the ones that benefit most from Artificial Intelligence. Cognitive computing, Chatbots, Personal Assistant, Machine Learning are all peripherals of AI used in the finance industry today. Many financial organizations are now willing to invest in the Artificial Intelligence, with their own funds or non-refundable foreign funding. Europe has increased its commitment to developing Artificial Intelligence technologies. *The Artificial Intelligence for European Union* (AI4EU) project officially started in January 2019, with a kick-off meeting among the partners in Barcelona on 10 January 2019. AI4EU brings together 79 top research institutes, SMEs and large enterprises in 21 countries to build a focal point for Artificial Intelligence resources, including data repositories, computing power, tools and algorithms. It will offer services and provide support to potential users of the technology, help them test and integrate AI solutions in their processes, products and services (European Commission, 2019).

Although they are confronted by a lack of confidence, prejudice, and major regulatory concerns, Artificial Intelligence has begun to gain popularity as a result of the use of large data, cloud services, and hyper-processing systems. Therefore, today's companies are open to a reliable solution designed to help people. Technological development is evolving at a very dynamic rhythm, and in the near future, important business decisions will also be based on the solutions provided by Artificial Intelligence, as it has the ability to identify how customers react to different situations and problems. Artificial Intelligence will help make good decisions at a very fast pace. However, finding the right balance between people and machines will always be necessary and timely.

There can be five ways how Artificial Intelligence has transformed the finance industry (Maruti TechLabs, 2019): risk assessment; fraud detection and management; financial

advisory services; trading; and managing finance.

- Artificial Intelligence can be successfully implemented where there is a previous database. Institutions providing financial services offer such a database either because accounting and records are second nature of the business, or because they have a record of clients and their services. An example for financial service can be: credit cards. Banking uses credit scores as a means of deciding who is eligible for a credit card and who is not. Thus, based on customer data, information is obtained about the individual loan repayment habits, the number of loans currently active, the number of existing credit cards, etc. These data can be used to customize the interest rate on a card so that it makes more sense for the financial institution that offers the card. Now, take a minute to think about the system that has the ability to go through thousands of personal financial records to come up with a solution – a machine taught. Here comes Artificial Intelligence (Moşteanu, N.R., 2019c). Given that it is based on data and dependent data, scanning through these records gives Artificial Intelligence the opportunity to make a recommendation of historical lending and credit offerings (Maruti TechLabs, 2019). Data efficiency and accuracy will surely be given by Artificial Intelligence. This helps reduce data processing time, customer risk assessment, and decision-making on current and future client management. Artificial Intelligence begins to take the place of a human analyst very quickly, with less chance of error and analysis of large data volumes. In this way, Artificial Intelligence allows the automation of domains that require intelligent analysis and clear thinking. One of the biggest challenges faced by large banks, insurance companies, and financial institutions when trying to adopt Artificial Intelligence is that large volumes of their historical data are stored in paper documents rather than in digital spaces. Machine learning models are necessarily trained on digital data, so financial institutions have to ensure that they digitize old documents before hiring scientists to build Artificial Intelligence solutions or to purchase Artificial Intelligence software from vendors (Azuly, D., 2019).

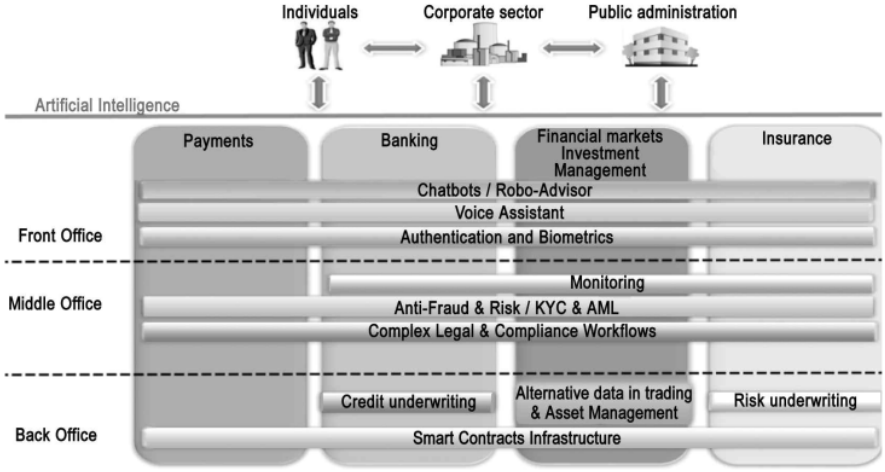

Figure 2. Artificial Intelligence used in different types of businesses
Source: (Moşteanu, N.R., 2019c)

- Risk reduction is taken into account by each institution, especially those that offer financial services, and trades money or movable assets with economic value. For example, a bank's loan. The loan that a bank offers is, in principle, someone else's money, so you also pay interest on deposits and dividends on investments. That is why banks and financial institutions have many frauds. Artificial Intelligence ranks first in identifying security and fraud. Can use past spending behaviors for different trading tools to highlight strange behavior, such as the use of a card in another country just hours after being used elsewhere or an attempt to withdraw an amount unusual money for the account in question. Another excellent feature of fraud detection using Artificial Intelligence is that the system has no doubts about learning. If it raises a red flag for a regular transaction, and a human being corrects this, the system can learn from experience and make even more sophisticated decisions about what can be considered fraud and what cannot (Autonomus Next, 2019). Currently, the site of the majority of financial institutions has chat consultants. In the future, we can expect more robot consultants. These would reduce the costs of counselling and consultation, and therefore, at the institution level, the level of commissions for individual investments would be reduced. Another evolving area is bionic consulting, which combines machine calculations and human understanding to offer options that are more effective than what their individual components provide. Collaboration is crucial. Even now SMEs still use to perform financial and accounting recordings in a rudimentary and essential way using very simplified software (Faccia A., Moşteanu N.R., Fahed M., Capitanio F., 2019), artificial Intelligence together with people becomes a common component of the financial decision-making process (Moşteanu, N.R., 2019c).

Financial institutions are based on and rely on computers and experts to determine future models of the market. Transactions and investments depend on the ability to accurately predict the future. The machines are excellent because they can shorten a huge amount of data in a short time. Let is take the plethora of customer information that a multinational corporation collects as an example. In order to transform it into business intelligence that can be acted upon, information needs to be stored, classified and interpreted. Artificial Intelligence is most commonly being implemented in businesses by running behind-the-scenes algorithms able of processing huge amounts of information (big data) which would otherwise be either too large to comprehend by the human mind or too mundane. Machine learning, predictive analytics, data management are just a couple

of examples of Artificial Intelligence implementation in business (Outsourcing Advisors, 2019). Moreover, depending on the individual risk appetite, Artificial Intelligence can suggest portfolio solutions to meet the demand of each individual. Therefore, Artificial Intelligence can definitely help in making decisions about when to buy, hold and sell the stock.

4. Research analyze and findings

4.1. Analysis of Artificial Intelligence

About 75% of the electronic devices we use have some form of artificial intelligence. Autonomous systems can reduce or eliminate the need for human involvement in certain tasks. The tools of artificial narrow intelligence (ANI) are becoming more and more powerful, due to the development of machine learning processes and natural language processing, as well as advances in the fields of materials science, networks, energy storage and hardware capabilities. ANI is artificial intelligence that equals or exceeds people's abilities or efficiency, but only in the case of certain specific tasks (Cutieru I., 2019).

Few years ago, Artificial Intelligence was considered as a threat as some studies were predicting that a big slice of the workforce was going to lose their jobs and replaced by artificial intelligence applications and machinery. In 2013, Carl Benedikt Frey and Michael Osborne, both Oxford academics, estimated that by middle of year 2030, 47% of Americans jobs are at high risk of losing their jobs since they will be replaced by automation (Frey C.B., Osborne M.A., 2017). Even near-term outlook has been quite negative. A study by OECD revealed that 9% of the jobs in 21 countries forming part of the OECD membership could be automated (Arntz, M., Gregory T., Zierahn U., 2016).

Technological instruments evolve rapidly, the ultimate goal being to acquire human characteristics, such as logic, reason, creativity. Intelligent devices, networked, equipped with software, machines, digital assistants and platforms such as Google and Facebook, perform extremely complex tasks. The systems that underpin today's global financial markets, many medical, energy and industrial enterprises or operations, depend on artificial intelligence, in one form or another (Cutieru I., 2019).

Yet recent studies revealed that companies are more likely to be using Artificial Intelligence to enhance computer to computer activities and much less often to human activities. This is a case of Associate Press where, in 2013, the company saw the necessity to adopt Artificial Intelligence and train Artificial Intelligence software to write short earning stories. Staff reporters at Associate Press could not barely cope with the increased demand for quarterly earning stories. In 2015, Artificial Intelligence helped Associate Press by writing over 3,700 quarterly new short stories, 12 times the number written by the staff reporters. In this case, Artificial Intelligence did not contribute to mailbag reports, instead it contributed to free business reporters in writing more in-depth stories on business trends (Associated Press, 2019).

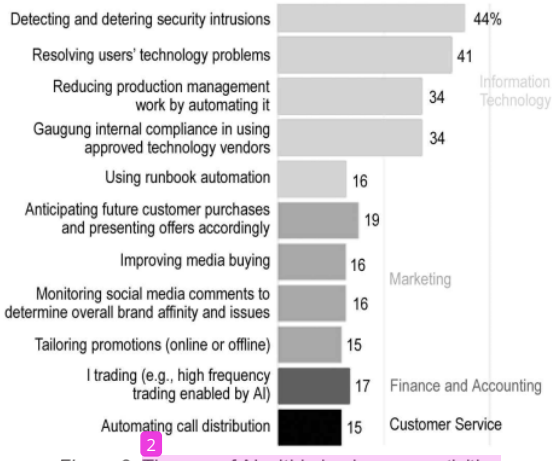

Figure 3. The use of AI within businesses activities
Source: r-stylelab.com, 2017

In the 1970's we were advised to 'Watch Out, There's A Thief about. Since then, with each new iteration of technology, and especially the WWW, those thieves have become more and more technically cunning. Organised Crime and foreign powers have used it to make financial gains and cause political instability – fighting a Hybrid War. In 2019 should we now be shouting "Watch Out, There's an Artificial, Intelligent, Thief About"? Artificial Intelligence presents yet another opportunity to them to harm individuals, companies and governments. It also presents an opportunity to the CISOs (chief information security officers) and friendly cyber cops too (Howkins F., 2019).

As mentioned previously, Artificial Intelligence is being used for several purposes such as suggest what customer can buy, conducting online securities trading, however as shown in the above image Information technology is the largest adopters of Artificial Intelligence. Geographically increase in cyber-attack attempts are overloading IT professionals, who have to deal almost daily with these increase in hacking attempts. In fact, 44% of the global companies surveyed are using or willing to use Artificial Intelligence in their IT department to monitor, detect and deterring security intrusions. This is achieved by monitoring huge amount of machine to machine activities. Artificial Intelligence is not automating the jobs of IT security personnel but with it help to detect cyber-attacks, and, with an intensive monitoring of machine to machine data, these types of attacks were significantly reduced. In reality, Artificial Intelligence is helping IT security professionals to be more valuable to their company by focusing on other more valuable security tasks.

4.2. Analysis of Artificial Intelligence implementation in European Union

At the beginning of 2018, 24 EU Member States signed in Brussels a declaration of cooperation in the field of artificial intelligence, in an attempt to keep up with the investments made by the US and Asia. Malta is one of the EU Member States that has signed this memorandum since 2018. Romania was among the very few Member States that delayed the signing of the memorandum for 2019.

The importance of developing this branch of digital at regional and national level covers a wide range of potential advantages. Any investment in AI has measurable effects on the economy. For example, each country, including Romania could have an approach through which to exploit the potential of these technologies in order to recover some economic gaps, compared to the western countries. This fact implies the implementation of the National Strategy on the Digital Agenda, with emphasis on the communication infrastructure, the degree of connection of households to the Internet and the digital education of the population.

In each country, information campaigns on Artificial Intelligence began to take place. However, at national level, in most European countries, the implementation of artificial intelligence is still in its infancy, manifesting timidly at the level of certain companies, in various forms (Cutieru I., 2019).

4.3. Analysis of Artificial Intelligence implementation in Malta

The Maltese government is embarking heavily in Artificial Intelligence and keen to work and collaborate with companies, nations and R&D organizations to accelerate the Artificial Intelligence agenda. Malta is being seen as the ultimate Artificial Intelligence project site.

The present analyze revealed that there are numerous factors for Malta to be considered as the Artificial Intelligence project site. Malta's population is only half a million of inhabitants and a tech-savvy population, EU member state and English as an official language. Apart from that, its strong and rapidly growing economy with established law and regulatory framework make it more ease to promote the adoption and use of innovation technologies.

Our research understood, that during the last two years, Malta give a special attention to Artificial Intelligence and Cyber security, organizing forums and summits (2018-2019), making a link between public and private sectors, businesses and academia. More than this, there is a Public Strategy for implementing Artificial Intelligence. The first strategic pillar seems to be to increase awareness of what Artificial Intelligence and all about its of practical use for businesses, particularly, and society in general. From this respect a special attention is given to research and Development activities and Start-ups focused on new technologies innovations. The second pillar aims to adapt Artificial Intelligence in public sector and transform the way citizens and business interact with government by providing public services of excellence by being more efficient and improving internal operations and governance, leading to better use of taxpayers' money. In this respect, there are many pilot-projects. One of them includes Artificial Intelligence for traffic management. Artificial Intelligence can identify traffic patterns behavior and optimize traffic light control with an ultimate aim is to reduce congestion and emissions. A mobility analytic dashboard will be developed to generate location intelligence across different modes of transport in real time. Similar approaches will be used in public sectors, such as education, healthcare, tourism and utilities. The third pillar foreseen to adopt Artificial Intelligence in the local businesses. From this perspective, the government will aid in developing and integrate Artificial Intelligence applications in the way they work and the way they do business (Malta. AI., 2019).

From research's analyze we may say that topic as Artificial Intelligence is bleary new in Malta, and starting with 2018, along with awareness of its importance promoted at European Union level, it began to occupy one of the prime places in the country's development strategy. Currently no businesses implemented Artificial Intelligence within their operational process. Nevertheless, Malta expect very soon to have businesses and public entities which are using Artificial Intelligence to increase profitability and as a tool for risk management (specially to reduce human errors).

4.4. Analysis of Artificial Intelligence implementation in Romania

At the level of Romania, the implementation of Artificial Intelligence is still at the beginning. The year 2018 marked the start of the first forms of business in this field. In Romania, Artificial Intelligence start-ups were started, the most relevant being UiPath, the first Romanian unicorn, which has expanded to many countries and currently has an Artificial Intelligence research centre in the United States. It can be stated that many large Romanian companies are constantly investing in platforms, systems, projects and ideas, based on artificial intelligence. For example, Banca Transilvania stated that it intends to expand, in the future, the use of artificial intelligence, at the level of several departments, one of the steps taken in this direction is the collaboration with two Romanian software companies: Druid and UiPath. Druid uses algorithms to analyze all the business information existing in an organization, to provide an advanced way of assisting in decision-making. UiPath, on the other hand, ensured the automation of several processes in areas such as audit, accounting, call center and human resources. As a result of these collaborations, Banca Transilvania has launched two chatbots, which provide online information to customers. Many experts believe that artificial intelligence will become, by the end of next year, the main means of communication between banks and customers. At the beginning of 2018, one Romanian City Hall announced the launch of "the first civil servant based on artificial intelligence in Romania", which was to be, in the first phase, a program, to which later the tasks would have been taken over by a robot installed in the City Hall's premises (Cutieru I., 2019).

Players on the Romanian market in the high-tech business, both domestic companies or suppliers of external software solutions and services that have subsidiaries here, can transform Romania into a pole of global artificial intelligence (ADH, 2019). At the present time there are 5 companies which develop Artificial Intelligence services in Romania: UiPath (efficient automation solutions); NTT Data (the impact of technology on medicine); Shared Service and Research & Development (solutions for employers); Happy Recruiter (Technological staff recruitment); and, pAIdAnalytix (smart financial solutions) (ADH, 2019).

In other words, Romania is a favorable environment for technological development, and companies are gradually developing more and more solutions based on artificial intelligence. Soon new companies will develop other solution that offer answers for combining artificial intelligence with cyber security to defend against cyber-attack.

4.5. Analysis of Cyber security

Over the years followed, computers started to become more and more connected, programs more and more advanced, interconnecting many data. Today we are using smart phones, glasses or watches, which are connected to our social and professional network. This is great! It makes our life easier. Still to have access to all this *benefit* we are using many applications, which may come at the package with viruses, which are becoming more advanced, and may expose ourselves to any cyber-attack.

Cyber security incidents and major cyber-attacks which some states and international organizations have faced in recent years have determined, at international level, the understanding of the need to adopt strategies and policies in the field of cybersecurity (European Union Agency for Cybersecurity, 2019).

The Accenture's graphical representation collected from 254 companies all over the world, describes the costs of the most common attacks based on their frequency in 2016 and 2017 (figure no.4). The study reports that this year (2019) the global average cost of a data breach is up 6.4% over the previous year to $3,860,000 million. The average cost for each lost or stolen record containing sensitive and confidential information also increased by 4.8% year over year to $148. The top costliest cyber-attacks like malware attacks do not involve directly the theft of money from the targeted organization. However, this costs to an organization an average of $2,400,000 per attack (Hub.packtpub.com., 2019).

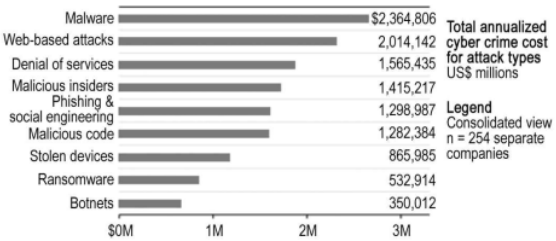

Figure 4. Cyber-crime' cost from different attack types
Source: Hub.packtpub.com, 2019

Malware threat has become sophisticated and more accessible as skilled hackers are selling their malware on the dark

web at affordable prices. Similarly, as in real life, a house can have high security measures and hardware such as cameras and alarms, still a thief may obtain unauthorized access by using a backdoor, which may have less security protection. The thief can still have access to the house without activating alarms and cameras, thus letting the owner unaware of the intrusion. Similarly, in cyber security a backdoor refers to an unauthorized user infiltrate in a computer system, gaining high-level user access without the owner's knowledge. In practice, we have notices find out various forms of malware. It includes all malicious software like tracking cookies, which are used to monitor the trends and habits of user, key logger, Trojan horses, worms and viruses. The intention of this attack is mainly to steal personal and financial data, install additional malware and hijack devices. Unlike other cyber security attacks that make the user aware of the attack like ransomware, backdoors are discreet. Due to the discreet nature, backdoor attacks are one of the most common threat for both consumers and business. In fact, in 2018 this cyber-attack threat increased from 34 to 173% over previous year (Malwarebytes.com., 2019). A common example cybercriminal obtain access by hiding a backdoor malware inside a tool used to hack a pirated software. Another example is to attach the malware software to seemingly legitimate application such as Coin Ticker. This application has two purposes; the first purpose is to allow users to monitor prices of various crypto currencies, and the second purpose, a malicious one, is to secretly install in the background not one but two backdoors with the aim to gain remotely access and control to the system (BleepingComputer.com., 2018).

Russian cybersecurity solutions maker Kaspersky Lab announced Wednesday that 53,000 companies have discovered infected or potentially unwanted files, disguised in essays and textbooks for schools and universities. At the same time, from August 2018 until July 2019, they were used in 356,662 attacks on 104,819 users – a decrease of 21%, compared to the previous year's figures. In total, there were 17,755 threats claiming to be books for students, most often false English (2,080), mathematics (1,213) and literature (870). The vast majority of threats hidden under these forms were downloaders of different files: from annoying but not dangerous adware or unsolicited software to extremely dangerous malware that steals money (local news, ziare.com, 2019).

Cyber-attack can affect drastically the production process causing financial losses such as an ecommerce shop will be unable to continue its business after a DDoS attack or web-based attack. Similar attacks can also affect physical machinery, for instance the Stuxnet cyberattack against one country's nuclear facility (Csoonline.com., 2017). The Stuxnet purpose was not only to be able to access the computers but also to target specific machinery like the centrifuges used to the production of enriched uranium that powers nuclear weapons and reactors. The attack managed to control the speed of spun of these centrifuges, damaging the delicate equipment, and, also managed to falsify the diagnostic status of these equipment thus making it difficult to detect the wrong doing (Csoonline.com., 2017).

4.6. Analysis of Cyber security and Cyber-attacks in Malta

Cyber-attack also affected Malta, in fact 40% of local businesses suffered from a form of cyber-attack. Most of the firms where affected with various forms of cyber-attacks, mainly by fraudulent emails, scam calls and unknowing installation of malware or malicious software. There are various motives in doing a cyber-attack, for instance a bank can be attacked asking for money or denial of service (DDos). In cases where that attacks are on government entity, the aim of the attack could be disrupting any government operations (Schembri, S., 2019).

A very recent cyber-attack affected operations of a local bank. Bank of Valletta (BOV) had to halt all its operations this year after a cyber-attack hacked the system and moved funds overseas [40]. The attack consisted of creating false international payments totaling 13 million and transfer these millions to banks in UK, US and Czech Republic and Hong Kong. The state security service informed the Central Bank that the BOV conducting the wrong activities. From that certain moment, BOV initiated a task force to suspend all the ATMS, branches and website after the reconciliation of payment failed to match. This move caused a disruption in the economy as BOV hold half of the Maltese accounts. Additionally, apart from the Maltese economy, it disrupted the operations abroad as like some credit card holders couldn't send payments to hotels abroad (Reuters, 2019).

Cyber-attack can also be intended to disrupt government reputation. The local press announced that Malta's government servers has faced a rise in attacks during the Malta's presidency of Europe's Council of Ministers in 2017. The attacks increase by 40% on the normal level of attacks, mainly DDoS and some malware on computer systems from phishing emails, over five million phishing emails a month. This attack caused governmental service web sites to perform drastically slower, causing the government online services to a halt. However, it is believed that the attacks did not penetrate the government systems (The Guardian, 2017).

4.7. Analysis of Cyber security and Cyber-attacks in Romania

The Romanian state assumes the role of coordinator of cyber security activities at national level, in line with EU and NATO initiatives. The cyber security issue has become a priority for these bodies, which implement regulatory approaches required for the development of cyber defense mechanisms. The purpose of Romania's cyber security strategy is to define and maintain a secure virtual environment, with a high degree of resilience and confidence, based on national cyber infrastructures, which would constitute an important support for national security and good government, to maximize the benefits for citizens, businesses and the Romanian society as a whole (European Union Agency for Cybersecurity, 2019).

Romania is currently facing threats to its critical infrastructure, originating from cyberspace (virtual space). In Romania, during the last years there were some cyberattacks in public administration sector, medical sector (5 hospitals were attacked, and they were about to lose their patients database, which could lead to serious issues related to medical activities, medical prescriptions and medications). Fortunately, all data was recovered in time. The specialists detected a computer virus using the technology based on Artificial Intelligence.

In Romania, digital education in the field of information security continues to be deficient, most of the alerts processed by CERT-RO, about 87.8%, refer to vulnerable computer systems, compromised or infected with various malware variants, situation influenced and low level. of individual digital skills. Thus, the rapid reaction to such incidents, as well as the dissemination of information to the public is vital for limiting damages and protecting users. Natural persons, legal entities and public institutions in Romania will be able to access the unique number 1911 to report the cyber security incidents they have found. Through the National Center for Cyber Security Incident Response – CERT-RO a unique number 1911, which can be reported from all networks and to which cyber security incidents can be reported by individuals, legal entities and public institutions, provided through Call Center a primary care and counseling for diagnosis and remediation (Ziare.com, 2019). More than this, in Romania there is a special portal where you can be informed and helped to be protected against any type of cyber-attack: https://hackout.ro/ghidul-de-securitate-cibernetica/ghid-parole/ (Hackout, 2019).

5. Conclusions and recommendations

The research paper it emerged that Cyber-attack is a real threat and will definitely increase in its intensity and sophistication in the coming years. Thus, we have to be prepared and use new technological tools such as Artificial Intelligence and Cyber security to protect sensitive data, at any level, from individual, business to government and entire nation from warfare created by cyber-attacks. In these regards nations around the world should adopt strategies in creating awareness about new technologies and give financial support for research and develop in new technologies.

The present research tried to present the importance of Artificial intelligence and Cyber security to protect ourselves against Cyber-attack. Simultaneously, the present paper comes to underline the importance of using the artificial intelligence and cyber security to create a safer business environment. From this perspective, we can say that, companies from today and those from the coming future is better to start be aware, learn about, and look for opportunities where new technologies such as Artificial Intelligence could help in increasing business profitability and help in the same time to develop and implement an efficient cyber security system.

The research had shown that Artificial Intelligence can assist in creating a safer business environment. Nevertheless, humans can still be the weakest point in terms of cyber security. Although Artificial Intelligence can use machine to machine data learning to greatly aid in cyber-attacks, still a single careless user can cause severe damage the whole system and there is no way to predict that. Awareness about thinking on how to use internet should be the first priority for security manager's way before adapting any new technology. The present paper present below some possible advices that can help in having a secure work environment (Drapala K. Cisco Umbrella, 2013):

- The most important thing is that *everyone can be a target for hackers*;
- Good password management is very important, use a strong password with mixed characters and were possible use different passwords on multiple sites. Keep the password safe, preferably in human memory;
- Lock any equipment that have sensitive information or that is a gateway to other computers with sensitive information, never leave unattended devices;
- Be very careful in opening attachments or links from unknown sources. Some links and websites can be very near to the original, any suspicion is better to inform an security administrator;
- Sensitive browsing such as internet banking should be done on secure devices that you can trust;
- Keep your system updated with anti-malware and anti-virus programs and regularly updates;
- Be very careful on plug in peripherals such as external hard disks or flash drives that can contain virus or malware which can spread in your system;
- Limit the personal data that is shared on social media. Criminals can use this information to plan for a cyber-attack;
- Be aware of social engineering where attempts are made to gain sensitive information through manipulation;
- Any unfamiliar activity on your system should be immediately reported to IT security administrators.

Artificial Intelligence can be implemented in any part of the business process, front-office, middle and in back-office functions. Artificial Intelligence can be implemented in any business, no matter the area of activities, anywhere where there are many computer-to-computer interactions. Some countries already started to implement their strategy related to cybersecurity and artificial intelligence and developed by now programs to make people aware about cyber-attacks and how to be protected, even there is national direct number (like 1911 in Romania) where you can report and get immediately assistance). Other countries started good initiatives in recent month (case of Malta), like *BSecure* scheme, which aims to instill an Artificial Intelligence and Cyber security mentality and assist the private sector in cyber security enhancement and awareness. Finally, companies that use Artificial Intelligence and implemented cyber security programs in their business process, already begin to achieve significant savings, manage to offer their clients the best services in real time and innovate faster.

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Literature Review: Critical Risk Factors Affecting Information-Technology Projects

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Abstract

Information technology (IT) projects do not only function as a business platform for launching new business direction, but can also simultaneously increase the profit and market value of the industry. In general, many of the implemented IT projects are accompanied by countless risks that might be difficult for the project manager to manage and mitigate. As such, the project manager is often faced with the mammoth task of making a prognosis on the potential risks that may threaten the implementation of a unique, complex or/and large-scale IT project. Hence, by reviewing existing literature, this study had aimed to concentrate on the critical risk factors faced by the IT projects as a way of aiding the project manager in mitigating the current management issues.

Keywords: *critical factors; risk; information technology; IT projects.*

1. Introduction

The information technology (IT) industry is facing a rapid growth and is expected to increase to US$ 396.7 billion in 2016, a massive 35% of improvement from 2011 (Kochhar, 2015). As mentioned by (Spacey, 2015), an IT project is generally made up of a software development blueprint (artificial intelligence, analytic database, content management, e-commerce, event processing, financial software, risk management, software development and scientific computing) as well as those of technology products and architectures. Besides increasing the profit and productivity of the industry, these IT projects were also regarded as useful strategies for enhancing the quality and reputation of the companies. According to the Department of Labour in the United States, the recruitment of software designers and programmers for IT projects is predicted to have a significant increase of 21% from 2008 to 2018 as compared to the average recruitment from the other sectors (Gentile, 2012). However, this estimate of a high recruitment may not be reflected by the high success rates of IT projects as most companies were shown to be bogged down by the risk management issues.

In the recent years, many companies have begun utilizing the IT system as a risk management platform (Poolsappasit et al. 2012). As such, the success of an IT project is not only dependent on the full utilization of the system, but also on the risk management effectiveness, where the IT manager seeks to manage the balance between the cost and its return on investment capabilities. Therefore, the identification of critical risk factors has now become a key factor for companies to reduce the probability and impact of threats on the IT projects as well as in the forecasting of its risk possibilities.

1.1. Risk

While risk is defined as the exposure to the chance of injury or loss; a hazard or a dangerous chance (Richard Eiser et al., 2012), a project risk can be described as an uncertain event or situation with either a negative or positive influence on the schedule, budget, specification and quality of the project goal (PMI, 2013). Since risk has been depicted as the probability of harmful consequences or expected losses due to the interaction between natural or human related hazards and those of uncertain circumstances, this implies that the risk level of the IT project will thus be affected by the likelihood and the degree impact of those unforeseen incidents.

1.2. Information technology projects

Information Technology or commonly known as “I.T.”, is an incorporation of tangible equipment, the administration of virtual and computerized devices as well as the operational system and programming used for carrying out certain required functions (Nidumolu et al. 1996). In other words, IT is consisted of a set of technologies that specifically involves the storing and processing of information or in short, the information processing and telecommunication technologies of information transfer in computers. As for project, this is described as a temporary endeavour with a well-defined starting and ending time that is undertaken at all organizational levels in the creation of a unique product/service (PMI Inc, 2000) as well as for achieving a certain corporate strategic plan. Therefore, an IT project can be regarded as an activity that encompasses science advancements in the implementation phases, where the modifications of infrastructures can have an impact on the information security and the relationships between data, software and hardware of a network infrastructure.

2. Critical risk factors affecting IT projects

Throughout the years, many researchers had attempted to identify the potential risks of an IT project through the human and technological aspects as well as those related to the management and planning system of a business environment. These critical risk factors with their proposed solutions are explained in the following paragraphs.

One example of the risk factor that was identified had been the legal or business conflicts that may have occurred between the multi stakeholders as a result of their different goals and vision for the IT projects (Nakatsu & Iacovou, 2009; Liu et al., 2010;Alfaadel et al., 2012; Stewart, 1999), which is further translated into the collaboration issues between the project team members. The lack of consensus as well as the understanding on the daily IT operations among certain stakeholders was found to have not only created confusion among the project team members (Liu et al., 2010), but also hinders the implementation of an IT project.

Apart from the language barriers (Hongyan, 2010; Kerzner, 2009), other communication issues such as the lack of communication and collaboration between technical partners, clients and project team members were also proven to be hindrances of a successful IT project implementation (Alfaadel et al., 2012). Since this sort of miscommunication had arose because of the different expectations set from the clients as well as between the system developers of the project team, this will then require the IT project manager to establish a properly defined goal prior to the commencement of the project, otherwise the communication and planning of the project will be compromised and cause a standstill of the intended project.

Multiple IT strategy risks can also occur if multiple information technology environments and a large amount of technology infrastructures and platform are used in the IT projects (Levina & Vaast, 2008; Sarker & Sahay, 2004). Also known as the technology strategy plan, the IT strategy is a comprehensive blueprint that is involved in providing a technological guideline for achieving the business goals in the form of a detailed written document. Although many project managers had employed the multiple IT strategy as a way of supporting corporate priorities and model operations, many of the global IT projects had however, experienced collaboration and integration setbacks as a result of this method adoption (Herbsleb & Moitra, 2001; One-Ki (Daniel) Lee et al., 2015).

While knowledge management is seen as a crucial element for knowledge-sharing, there had been different views concerning knowledge-sharing among the attitude experts (Battin et al. 2001; Herbsleb & Moitra, 2001; Taylor et al., 2012). According to these experts, multi-group knowledge-sharing generally involves a group of people who work interdependently and sharing the same purpose across places, time and organizational boundaries within a geographical area. Under this circumstance, the multi-group knowledge-sharing may pose as a challenge among the project team members as a result of not only the different perspectives used on knowledge-sharing, but also from the various communication channels used (Herbsleb & Moitra, 2001). This will then result in a lack of trust and consequently, selective knowledge sharing within the project team members.

Certain parties had also claimed that the planning and control risks could have been resulted from the insufficient forecast of the much needed resources, inadequate project planning as well as the failure in task distribution and the coordination of resources in the IT projects (Alfaadel et al. 2012; Nakatsu & Iacovou, 2009). Since IT projects may include the allocation of various tasks or activities with specified requirements (Kotlarsky, Oshri et al., 2007; Sakthivel, 2005), the team members may thus have different viewpoints on the system requirements along with the criteria for resource allocation methods in the completion of an IT project. As such, contemporary reachable resources such as machines may no longer be deemed as sufficient for completing an IT project since the execution phase may be hindered by the various interpretations of the new technologies used (Jiang & Klein, 2000; Fairley, 2005; Schmidt et al., 2001).

Task-technology misfit risks may also ensue as a result of the major technological changes that had occurred during the IT development period (Goodhue & Thompson, 1995; Espinosa et al., 2007; Avdoshin & Pestoskaya, 2012; Powell et al., 2004). The discrepancies between the tasks assigned and the availability of technologies could be due to the absence or lack of a uniform or standard collaboration tool that interrupts the tasks workflow at multi-locations or among multi groups. Mismatches between tasks and technologies can also occur because the project development method had not been able to accommodate to the technical complexity level of the IT projects, hence reflecting the incapability of the project manager in making well-informed decisions. For this reason, some researchers had suggested the use of technical accessibility for a more effective project implementation as well as to improve the strategy and priority variance between the business goals and the IT project teams (Espinosa et al., 2007).

Another critical risk factor that had been identified for affecting the IT projects was the incorrect arrangement of business and IT strategies as a result of the company's culture and the communication gaps that had occurred during the implementation of various project management tools (Herbsleb & Moitra, 2001; Cusumano, 2008). Apart from conflicts and the incorrect alignment of corporate practices between the project team members, the different priorities set by the various corporate cultures will also result in inefficiencies and unnecessary investments because of the mismatches that had occurred between the technologies and business strategies.

Some researchers had also claimed that the personnel risk category had played a major role in the implementation of technologies in an IT project, where the personal agenda among team members such as their lack of interest in the project (Baccarini et al., 2004; One-Ki (Daniel) Lee et al., 2015) can affect the completion period of a particular project (Chua, 2009). This will therefore lead to communication breakdowns between the team members since some individuals may not only find it a struggle for being part of the IT project, but will also create biasness in terms of the decision-making process, particularly during the execution phase of the concerned venture.

The project manager's lack of awareness on the sudden regulation changes too may influence the infeasibility of the project (Chua, 2009; One-Ki (Daniel) Lee et al., 2015), where the sudden policy changes can make it difficult for the project team to control and track the changes that had occurred in certain locations or the affected IT projects. As a result of the frequent incorrect change requests, the increasing frequency of changes for rework by the different stakeholders of the IT projects will only cause confusion among the project team members, not to mention heightening the failure risk of the IT project.

System incompatibility along with the poor performance of some software application systems such as its excessively slow operation and major operation issues were also proven to be barriers to the implementation of an IT project (Ahlan & Arshad, 2012; Baccarini et al., 2004; Nakatsu & Iacovou, 2009; One-Ki (Daniel) Lee et al., 2015). As such, the project manager has to ensure that apart from the system's software and hardware, the network infrastructure such as those of virtual capabilities, basic use of the system as well as a continuous maintenance system are sufficiently equipped in the implementation of an IT project.

According to (Avdoshin & Pesotskay, 2011), the failure of IT projects as seen from the deviated results can also be influenced by the insufficient knowledge or skill of the team members in handling the project management process. Therefore, the project manager should not just equip himself with the necessary knowledge and skill of the project management process, but also with a different set of skills (One-Ki (Daniel) Lee et al., 2015) such as those of people-management skills when dealing with managers, end users, technical staffs, top management and software developers. Furthermore, companies should also consider developing a standard skill requirement for certain IT projects as a way of overcoming the insufficient knowledge and skill issues among the project members and increasing its efficacy for achieving the project goal.

In addition, the lack of clients or end users' involvement in

the IT projects, particularly during the infant stages as well as the lack of user competency, commitment or involvement during the operation of the IT project (Nelson & Cheney, 1987) were also proven to be one of the most frequent occurring risk factors (Avdoshin & Pesotskay, 2011; Alfaadel et al., 2012; Keil et al., 1998; Chua, 2009; Nakatsu & Iacovou, 2009). Aside from an unintelligible system that had caused the users to be fearful of something they have less control over, the users' resistance towards the introduction of a new system was also found to be a major contributing factor of the project risks.

Some researchers had proposed the lack of involvement by the top management, for instance the project supervisors, as well as the lack of visibility in their commitments, policy modifications and allocation of resources (Tesch et al., 2007; Sharma et al., 2008; Kevin Mason, 2006; Wallace et al., 2004) to be the causes of the failed IT projects. The involvement from the top management is deemed to be an important element in the IT industry given the pre-determined maturity of the project models, where the critical process guidelines provided by the corporate office will be used by the project manager to execute the project's given goals (Zwikael & Globerson, 2006). For that reason, IT projects are often seen as having too many co-dependent elements, where the modifications and involvement from the top management in one element can easily influence the results of the affected IT projects.

Apart from the process-related risk category such as the ambiguous specification of the project goal that was proposed by Chua (Baccarini et al., 2004; Bailey & Riffel, 2010; Chua, 2009), the unclear or inadequate project goals and values were also highlighted by certain researchers (Lee et al., 2006; Morris, 1999) as potential risk determinants of an IT project. As such, the project manager has the responsibility of not only conducting a sensibility inspection on the planning process phase of the IT projects, but also in defining the specific business goals that are aligned with the clients' expectations.

Other risk factors that were identified had involved those of inadequately trained team members in the IT projects (Nakatsu & Iacovou, 2009; Fowler & Horan, 2007) as well as the lack of user participation in the training process, where according to some of the users, the training had been hard and it had been difficult to set up an effective project team for a particular IT project (Dunn, 2001). Since the project manager and the team members generally do not have the adequate knowledge and tools for managing an IT project, the project manager must therefore organize training programs for areas that require more technical know-how and product knowledge in the execution of the IT projects.

Another area that has been identified as affecting the success rate of the IT project is the poor or inadequate documentation as a result of the different project management practices and work cultures that were applied by the project team members (Chadli et al., 2016; Ezamly & Hussin, 2011; One-Ki (Daniel) Lee et al., 2015). According to (Niu, 2009), documentation is often regarded as an important tool for transferring not only the implicit and verbal knowledge, but also those from the data producers to the secondary users as a way of reviewing the project history and the detailed information of the IT projects. Hence, the implementation of a database would be seen as useful for providing the different data and format required in the application of IT projects.

The personnel risk category in terms of staff shortfall is also regarded as one of the factors for affecting the success rate of the IT project (Avdoshin & Pesotskaya, 2012; Jiang & Klein, 2000; Ropponen & Lyytinen, 2000). Since a failed project is attributed to the shortage of experienced team members, training should therefore be provided to those who are involved in the specified IT projects as a way of mitigating the occurrence of inconsistencies in the implementation process (One-Ki (Daniel) Lee et al., 2015). However, certain researchers had also claimed that a negative personal attitude may increase the probability of staff shortages, hence resulting the failure of the IT projects (Baccarini et al., 2004).

According to certain researchers, business environment risks such as the changes in the corporate culture and business processes had also created an impact on the implementation of the IT projects (Fowler & Horan, 2007; Nakatsu & Iacovou, 2009). Since company businesses are often associated with economic conditions, an economic downturn may then lead to a possibly high-risk and costly IT project. In fact, some researchers had also claimed the Industrial and Governmental settings such as market conditions, threats from competitors as well as the obsolescence of the IT system as having an effect on the corporate IT investment projects. Apart from the unfavourable corporate culture resulted from certain possible hidden agendas within the corporation, the inadequate support given by the users in the IT projects (Baccarini et al., 2004; Chua, 2009; Nakatsu & Iacovou, 2009; Taylor et al., 2012) as well as the changing business climate were also seen as having a direct influence on the project development.

The success rate of an IT project is also influenced by the technology risk, for instance, the schedule issues as well as the techniques, dependability, quality, languages and the functionality used in the new technology system (Schmidt et al., 2001; Avdoshin & Pesotskaya, 2012). According to some researchers, the IT projects could still be threatened by unforeseen technical glitches even if the project had remain unchanged during the implementation phase (Liu & Wang, 2014; Hui & Liu, 2004). It is important to note that these risks would occur during the introduction of new technologies at its infant stages, where its full implementation had not really taken effect yet. For this reason, it is important for the project manager to be well-versed and have a thorough understanding on both the current system and new technology as a way of catering for the possible complications that may arise from an integrated system. Since a newly introduced programming approach may either oppose or support the system used by the technical team, it is therefore the project manager's responsibility to identify the potential risks as a way of dealing with the possible concerns that may crop up during the project's developmental and implementation stages.

Additionally, the other risks that may occur in the IT projects are those of unclear scopes or objectives that had resulted in delayed projects (Boehm, 1991; Avdoshin & Pesotskaya, 2012). Apart from the poor planning and management of the project development, the addition of complex software may also lead to slippage of the projected schedule. The failure of the developer in meeting the schedule will thus be regarded as critical due to the large financial loss involved. Therefore, since schedule and scope risks are found to be correlated to an IT project's life cycle, it is suggested that only limited changes are introduced during the implementation phase as way of reducing the occurrence of the risk factor.

As mentioned by (Tesch et al., 2007; Avdoshin & Pestoskaya, 2012; Ropponen & Lyytinen, 2000; Fairley, 2005; Schmidt et al., 2001; Wallace et al., 2004), financial risk is also seen as another factor for affecting the success rate of an IT project through the potential loss of financial damage. Since the financial aspects of capital flow, budgetary control and the return on investment (ROI) restrictions were found to be related to the various costs (delivery cost, one- time cost, recurring cost, fixed cost and variable cost) of the IT project, companies can therefore consider employing structured techniques or effective tools as a way of accurately estimating the various costs involved in the planning of an IT project. As such, the project manager can consider setting up a financial risk management team for controlling and managing the financial aspect of the IT projects as a means of mitigating the possible occurrence of financial risks.

Other than the reasons mentioned above, Ropponen had also claimed the subcontracting risks category as an influencing factor of the IT project (Sharma et al., 2008; Ropponen & Lyytinen, 2000). With the subcontracting and intellectual property risks referring to the shortfalls in managing the external

duties carried out by the subcontractors, litigations should therefore be made mandatory in protecting the intellectual property of IT projects so as to prevent their competitors from imitating their developed systems. For this reason, apart from enforcing the registration of the copyright aspect, the project manager should also ensure that the project team members are contractually bounded from revealing any confidential information concerning the IT project as a way of preventing infringement from their competitors (Karlyn, 2015).

In summary, all of the 22 critical risk factors that had been identified in the existing literature as affecting the IT projects are shown in Table 1.

Risk Factors	Indicative Literature
1. Multi- stakeholder relations conflict	(Stewart, 1999; Liu et al., 2010; Alfaadel et al., 2012;Nakatsu & Iacovou, 2009)
2. Lack of communication	(Hongyan, 2010; Alfaadel et al., 2012; Kerzner, 2009)
3. Heterogeneous IT strategies	(One-Ki (Daniel) Lee et al., 2015;Herbsleb & Moitra, 2001; Levina & Vaast, 2008; Sarker & Sahay, 2004)
4. Multi-group knowledge sharing	(Herbsleb & Moitra, 2001;Battin et al., 2001; Taylor et al., 2012)
5. Task distribution and resource coordination	(Jiang & Klein, 2000;Alfaadel et al., 2012; Fairley, 2005; Kotlarsky et al., 2007; Sakthivel, 2005; Nakatsu & Iacovou, 2009; Schmidt et al., 2001)
6. Task- technology misfits	(Espinosa et al., 2007; Avdoshin & Pesotskaya,. 2012; Powell et al., 2004; Goodhue & Thompson, 1995)
7. Incorrect arrangement of business strategies and IT strategies	(Cusumano, 2008; Herbsleb & Moitra, 2001)
8. Personal agenda among team members	(Chua, 2009; Baccarini et al., 2004; One-Ki (Daniel) Lee et al., 2015)
9. Change requests from diverse sources	(Chua, 2009; One-Ki (Daniel) Lee et al., 2015)
10. Incompatibility of system/ network/ equipment	(Nakatsu & Iacovou, 2009; Baccarini et al., 2004; Ahlan & Arshad, 2012; One-Ki (Daniel) Lee et al., 2015)
11. Uneven skill/ experiences among project members	(Avdoshin & Pestoskaya, 2011; One-Ki (Daniel) Lee et al., 2015)
12. Lack of user competency and commitment/ involvement	(Avdoshin & Pesotskaya, 2011; Chua, 2009;Alfaadel et al., 2012; Nakatsu & Iacovou, 2009; Keil et al., 1998; Nelson & Cheney, 1987)
13. Lack of top management involvement	(Sharma et al., 2008; Tesch et al., 2007; Kevin Mason, 2006; Wallace et al., 2004; Zwikael & Globerson, 2006)
14. Lack of a clear project goal and value	(Lee et al., 2006; Baccarini et al., 2004; Chua, 2009; Bailey & Riffel, 2010; Morris, 1999)
15. Inadequate user/ team training	(Dunn, 2001; Nakatsu & Iacovou, 2009; Fowler & Horan, 2007)
16. Poor/inadequate documentation	(Chadli et al., 2016 Niu, 2009; One-Ki (Daniel) Lee et al., 2015; Ezamly & Hussin, 2011;)
17. Staffing shortfall	(Avdoshin & Pesotskaya, 2012; One-Ki (Daniel) Lee et al., 2015; Ropponen & Lyytinen, 2000; Baccarini et al., 2004; Jiang & Klein, 2000)
18. Business environment risks	(Fowler & Horan, 2007; Baccarini et al., 2004; Nakatsu & Iacovou, 2009; Chua, 2009; Taylor et al., 2012)
19. New technologies	(Avdoshin & Pestoskaya, 2012; Liu & Wang, 2014; Schmidt et al., 2001; Hui & Liu, 2004)
20. Unclear scope and schedule	(Avdoshin & Pestoskaya, 2012; Boehm, 1991)
21. Insufficient of financial support	(Ropponen & Lyytinen, 2000; Avdoshin & Pestoskaya, 2012; Fairley, 2005; Schmidt et al., 2001; Wallace et al., 2004; Tesch et al., 2007)
22. Subcontracting and intellectual property	(Ropponen & Lyytinen, 2000; Karlyn, 2015; Sharma et al., 2008)

Table 1. Critical risk factors of IT projects

3. Conclusion

Undeniably, IT project cannot be implemented without risks. As shown from this study, although the various IT projects were revealed to have exhibited different risk factors that reflect the uniqueness of the specified projects, the project manager can however, play a crucial role by identifying the opportunities presented from the risk factors of the IT project. As such, this study not only aids in the contribution of a successful IT project through the maximization of positive opportunities while simultaneously minimizing the negative impact of the IT projects, it had also provided ways for the project manager to incorporate an effective monitoring and risk control in the implementation of the IT projects.

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Digital Transformation of Economy

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Abstract

This research investigates the conceptual foundations of the fourth industrial revolution 4.0, its key technologies, and analyzes the development of digital technologies and IT products in the economy of recent years. The paper expands the understanding of the impact of digital technology on Russian business, the emergence of new professions and the obsolescence of a number of existing ones, due to the digitalization of the economy. According to McKinsey research, the potential effect of the commercialization of digital technologies in the Russian economy can reach 19-34% of the total increase in GDP by 2025. This paper aims to address this issue. The paper explains that the Russian economy has sufficient capacity to carry out a digital transformation with the goal of global integration into the global economic space. The paper finds that the implementation of the planned program "Digital Economy of the Russian Federation" today needs the formation of a national theory of digital economy, recognition and legislative regulation of blockchain technologies and cryptocurrencies, as well as stimulation of the formation of digital platform companies of the global scale.

Keywords: *digitization; industry 4.0; technology; digital economy.*

1. Introduction

Rapidly developing digital technologies are changing the usual forms and methods of the world economic life. It is not only individual business that is changing; the structure of entire industries and sectors of the national economy is also changing (OECD, 2019). New directions and opportunities for the development of companies, regions, and states emerge (PWC, 2017). An incredible time has come when something before was a fantasy and is now implemented as a real project. Such a process is called the continuous innovation process based on the technologies of the fourth industrial revolution.

The fourth industrial revolution, or as it is also called – Industry 4.0, is a transition to fully automated digital production, controlled by intelligent systems in real time, in constant interaction with the external environment, going beyond the boundaries of a single enterprise, with the prospect of uniting into a global industrial network of things and services. The first industrial revolution was based on the mechanization of production, the invention of the steam engine and the development of rail transport. The merit of the second industrial revolution is the spread of electricity and the development of mass production. Automation of production was made possible by the technologies of the third industrial revolution, which include the capabilities of information technology and electronics. Due to it, production has become massive. The fourth industrial revolution is characterized by the merging of technologies and erasing the boundaries between the physical, digital and biological fields, and therefore all organizations have no choice but to join (Heinze et al., 2018, p. 6; Shen, Lindsay and Xu, 2018) and build a new strategic management system (Berman, 2012, p. 16; Matt, Hess and Benlian, 2015, p. 339; Mainela, Puhakka and Servais, 2014).

Digital economics has formed the basis of a new era – informational. The formation of the Internet, informative technologies, stable interconnection channels, cloud technologies and numerical platforms, as well as the repeatedly increased size of data coming from various sources, guaranteed the emergence of disclosed informative concepts and mass industrial networks, as well as sharing economy (Oskam, 2016, p. 22; Cochoy, 2017; Heavin and Power, 2018). This had a transformative effect on all sectors of the current economy and business and contributed to the transfer of industrial automation to the new 4th level of industrialization.

Going in more detail about the technologies of the "Industry 4.0" program, one should talk about the implementation of the following key areas:

- *Industrial Internet of Things* (*IoT*) – the essence of the technology lies in the special equipment and the system of built-in sensors, which are combined into a single network and subordinated to a single production management system;
- *Augmented reality* (*AR*) – technologies that allow complementing the real existing world with various digital and graphical data in real time, using various computer opportunities;
- *Big data* and business analytics are the technologies that allow working with large data arrays, optimizing information in such a way that ultimately allows improving the quality of products, saving resources and improving equipment performance (Erevelles, Fukawa and Swayne, 2016);
- *Cloud computing* – technologies make it possible to process and store data remotely, and computer resources are provided to users as an Internet service;
- *Horizontal and Vertical Systems Integration* – the organization of close interaction both at various levels within the enterprise and between enterprises-partners in the production cycle;
- *Information security* (secure access, reliable communication, full control of access to control networks);
- *Additive production* – mastering additive technologies in the industry, including the use of 3D printing for

prototyping and manufacturing of individual parts;
- *Digital modeling*, being one of the basic directions of the implementation of the Industry 4.0 program, which will be actively used in production processes, including through the use of up-to-date data obtained using a virtual model of the surrounding physical world.

This paper aims to analyze the prospects and solutions for digitization of the Russian economy at both legal and organizational levels.

2. Methods

The methodology consists of a literature study, combined with the concept of holism. Digitalization has created and put forward new forms of channels, tools, and methods for management. The physical presence of a manager is replaced by digital leadership methods that are interactive and virtual (Khan, 2017, p. 42). This practice is vital to the ongoing development of an organization and is associated with another strong effect of digitalization: *holism*. It is now important for leaders to be aware of the changes and implications in general: whether in business, in society or for the individual (Drnevich and Croson, 2013). Thus, a holistic approach in modern management is already an essential quality of a modern manager of a complex and changing organization.

Each country in its own way demonstrates the success and approaches to creating a digital economy. So far, there is no absolute leader in the development of all aspects of the digital economy, although the pioneer of industrial technology and the birthplace of the term "Industry 4.0" is Germany (Horlacher and Hess, 2014). Certain success was achieved by the US economy in the development of national digital technologies. The volume of the digital economy in the structure of GDP is quite high and amounts to 10.9%, which is primarily due to the active investment of the private and public sectors in digital technologies. China's economy is developing rapidly and efficiently towards digitalization.

3. Results

Despite the fact that the Russian economy still belongs to developing countries, but in terms of the share of the digital economy in GDP, it is comparable to the US figures. According to estimates by McKinsey Global Institute, China's GDP is expected to increase by up to 22% by 2025 much due to Internet technologies (McKinsey, 2017). It is assumed that the transition to a digital economy in Russia will be one of the main factors of GDP growth (Zozulya, 2018). According to experts of the global consulting company McKinsey, the potential effect on GDP from the digitalization of the Russian economy in 2025 is estimated at 4.1-8.9 trillion rubles, which will be 19-34% of the total increase in GDP (McKinsey, 2017). The priority areas of Russian digitalization include digital ecosystems, digital platforms, 3D printing, in-depth analytics of large data arrays, the Internet of Things, etc.

The digital economy is part of the "Industry 4.0" project being implemented. It will be improved by the operation of digital companies. The operation of such enterprises that fit into the "Industry 4.0" scheme assumes digitalization and integration of scientific, technical, production and business processes vertically within a company, starting with researching products and ending with creation, logistics, and service during operation. Horizontal integration of a digital company is formed within the boundaries of interaction with suppliers, customers, and all partners that participate in the value chain of products. All actions are contained, monitored and controlled by the corresponding digital platform. It should be noted that digitalization implies a change of analog (physiological) concepts of collecting and processing information to scientific and technical modes that provide a digital sign of their condition. In a broad sense, this is the procedure for transferring to the digital sphere of the functions and business processes that were previously performed by individuals and organizations.

As mentioned earlier, the key element in the implementation of digital transformation processes will lie in the plane of the company, which must meet the following requirements:

- Computerization, that is, the provision of means for digital control. All modern equipment was originally designed for digital control, and equipment operating for a long time should be appropriately upgraded;
- Networking, that is, isolated technologies should be combined into a common environment that meets the requirements of the company's business. Typically, an Internet Protocol (IP) connection is used for this purpose, forming the IoT. Networking allows the combination of CAD/CAM (Computer-Aided Design/Computer-Aided Manufacturing) procedures with Manufacturing Execution System's (MES) process control tools and the remote maintenance. If not new, but workable equipment is upgraded, then it can also be included in the interaction;
- Visibility, that is, the creation of a digital display or a virtual counterpart of the enterprise;
- Transparency, that is, the relationship of digital imaging with analytical systems, more commonly known as big data systems;
- Forecasting, for which predictive analytics technology adapted to production can be used.
- Adaptability, that is, the ability to predict opens up the possibility of automating the functions associated with adapting a business to changing external conditions.

In addition to these factors, the effectiveness of the transition to a digital economy will be affected by the behavior and mentality of the company's employees, who are no less important than technologies. A digital company consists mainly of two things – an employee's willingness to change and free social interaction at all levels. Willingness to change implies: openness to innovation, continuous professional growth, commitment to change. Free social interaction is ensured by a democratic leadership style, the opportunity to openly express opinions, and active participation in the evolutionary process.

The key point in Industry 4.0 is the creation of an infrastructure based on three types of integration: horizontal integration of a business value model (value networks); through digital integration of engineering across the entire structural business model and vertical integration of the enterprise's production chain (networked manufacturing). Three-step integration allows turning the entire national economy into a single cyber-physical system, united by public administration. Cyber-Physical Systems (CPS) are the systems, consisting of various natural objects, artificial subsystems, and controllers, allowing presenting such structure as a whole. CPS ensure close communication and coordination between computational and physical resources. Computers monitor and control physical processes using a feedback loop, where what happens in physical systems affects computations and vice versa. The complexity of such tasks leads to the idea that it means creating a new level of automation, where computers are integrated or built into certain physical devices or systems. It is about the harmonious coexistence of two types of models. On the one hand, these are traditional engineering models (mechanical, construction, electrical, biological, chemical, economic, etc.), and on the other, computer models.

In order to include the Russian economy into the competition of the world economic space, a program was developed (Digital Economy of the Russian Federation, 2017), which is based on the "Strategy for the Development of the Information Society in

the Russian Federation for 2017-2030" (Decree of the President of the Russian Federation of May 9, 2017 No. 203) proceeding from the fact that digital economics implies economic activity based on digital technologies. The digital transformation of existing processes in the said program is defined on three levels, the interaction of which, strictly speaking, exert effect globally on the people and society as a whole. Three levels are represented by the following areas:

- Technological development of market players and sectors of the economy (activity), where horizontal integration between suppliers and consumers of goods, works and services is performed;
- Development of technology and technology platforms;
- Formation of an institutional environment, the task of which is to create conditions for successful interaction of market players. The institutional environment includes the following elements: regulation, institutions of financial support, information infrastructure, human resource development, etc.

In fact, the program "Digital Economy of the Russian Federation" at this stage is focused on two basic directions. The first direction will be formed by the institutions and companies themselves as the main link of the digital system. The second direction is planned to be implemented through the formation of the infrastructure component, which will ensure the continuous process of the digital transformation of the Russian economy.

The implementation of the project "Digital Economy of the Russian Federation" is allowed to be considered effective if by 2024 all the planned indicators are achieved, namely:

- in Russia, there will be at least 10 state-owned leading firms. These are high-tech firms that develop cross-technology and manage digital platforms;
- in the economic system, there will be at least 500 small and medium companies that are related to the field of digital technology formation;
- the number of graduates according to the trends of information and telecommunication technologies should be at least 120 thousand people a year, and the number of graduates with competencies in the sphere of informative technologies at the intermediate level should not be less than 800 thousand a year;
- 40% of residents are required to have digital knowledge;
- the number of implemented plans in the field of numerical economy 100 million rubles worth must be at least 30;
- the number of domestic institutions that are involved in the implementation of large projects in the field of digital economy $3 million worth in priority areas of international technology partnerships must be at least 10;
- with regard to the development of research competencies and scientific and technical reserves, the number of implemented plans should be no less than 30, the number of domestic institutions involved in the implementation of large plans in the priority areas of the international scientific and technological partnership – 10;
- 97% of people will gain access to the broadband Internet at a speed of 100 Mbit/s;
- 5G will work in all settlements where more than 1 million people live;
- the share of the internal network traffic of the Runet routed through foreign servers will stop at 5%.

In addition, one of the key goals of the project in the document is called the emergence of at least 10 high-tech companies working in the mass market and creating around the concept of start-ups and research communities which will guarantee the formation of a digital economy in the future.

4. Discussion

According to recent studies, each organization should evaluate the scope and objectives of management required in its niche (Halén, 2015, p. 69; Li et al., 2018). The management structure of a digital economy (*enterprise architecture*) must be measured in terms of the value(s) it creates, and therefore good management and ease of implementation are key to success.

In order to digitally integrate into the global space and increase competitiveness based on the key technologies of Industry 4.0, the Russian economy needs to form a nationwide theory of the digital economy. The concept of digital transformation is represented in the development of the following areas, which will form the nationwide paradigm "Digital Economy of the Russian Federation":

- recognition and legislative regulation of blockchain technologies, cryptocurrency, etc.;
- stimulating the formation of world-class "platform companies" (pilot should be based on Sberbank);
- development of the governmental technological initiative – roadmaps for the introduction of new technologies;
- development of the concept of statistical, national and public information, based on current developments, in order to increase the productivity of public administration;
- transition of the concepts of national and urban services into progressive platforms in order to increase the quality of services and ensuring of a customized layout to any citizen and business entity;
- new technological processes that are already being introduced: the development of new industrial technologies of "Industry 4.0" – intensive integration of "cyber-physical systems" (CPS) into the factory processes: 3D technologies (printing), genetic engineering, the Internet of Things, the creation of a quantum processor. This is only a part of new technologies that will radically change the production over the shortest run.

5. Conclusion

The digitalization process today is a kind of technical and economic wave that permeates the processes from creating, controlling production, promoting the product to the end-user and further after-sales service. Russia is not occupying the worst position, being in the group of countries – "followers" of "Industry 4.0" technologies. Obviously, it still seems appropriate to borrow some experience in shaping the model of e-economy from the countries that have already advanced in matters of digitalization and have already set the global technological course.

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