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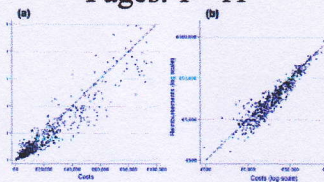
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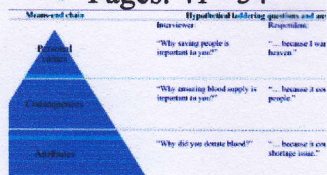
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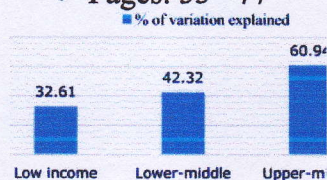
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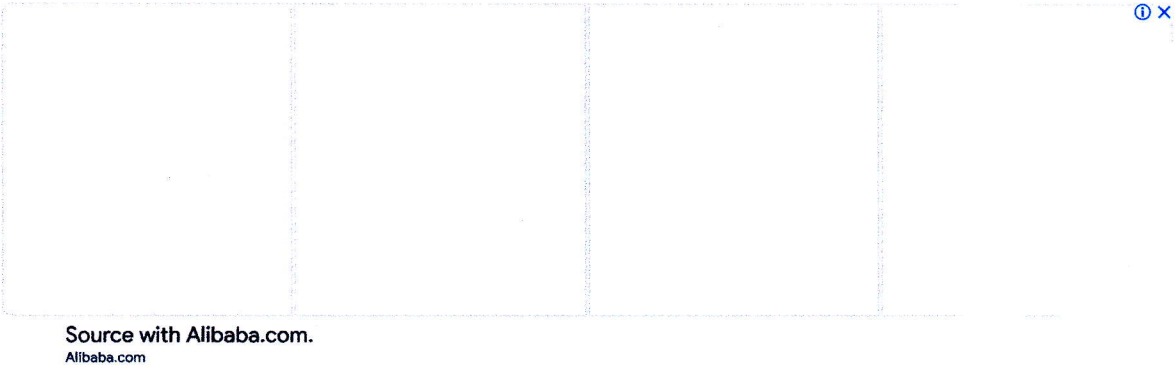
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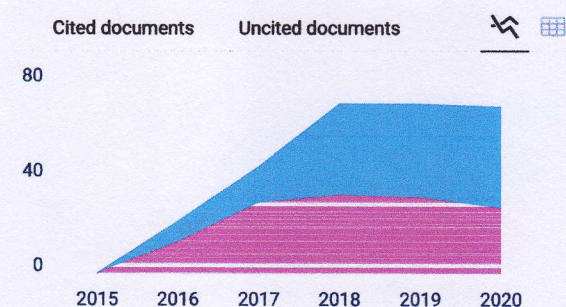
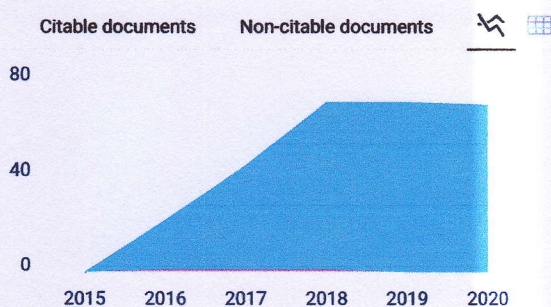
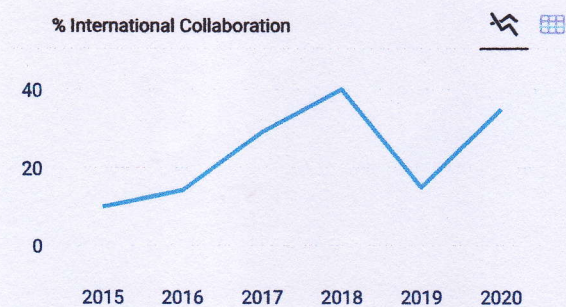
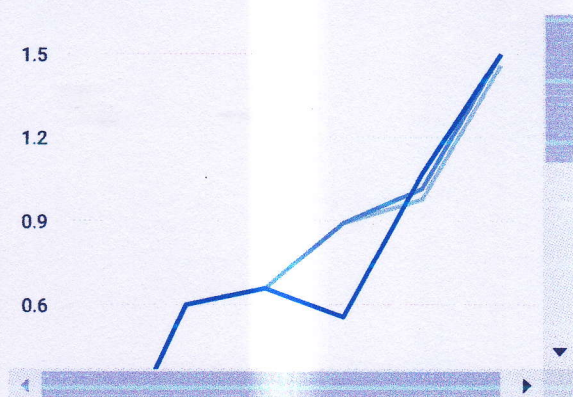
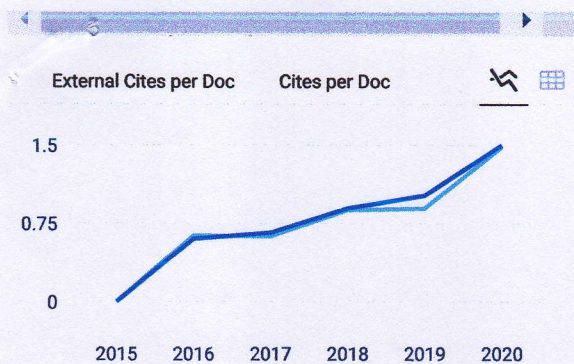
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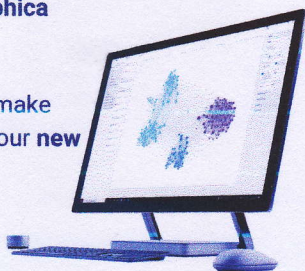
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# Motivation structures of blood donation: a means-end chain approach

Yeong Sheng Tey<sup>1,2</sup> · Poppy Arsil<sup>3</sup> · Mark Brindal<sup>4</sup> · Sook Kuan Lee<sup>2</sup> · Chi Teen Teoh<sup>2</sup>

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## Abstract

Understanding blood donation behaviours is pivotal to recruiting and retaining blood donors. Despite rich literature, this is the first study investigating the content and structure of motivations that underlie blood donation using a means-end chain approach. Based on soft laddering interviews with 227 respondents (31 first-time blood donors and 196 repeat blood donors) in the Klang Valley of Malaysia, we identified that their blood donation was primarily driven by the attribute ‘help people’, the consequences ‘increase blood supply’ (as perceived by first-time blood donors) and ‘indirect downstream reciprocity’ (as perceived by repeat blood donors) associated with the attribute and the belief that the consequences can lead to the fulfilment of the value ‘humanitarianism’. Understanding of such hierarchical links between motivators is crucial in developing self-relevant communications. The resultant outcomes are likely to be more effective than the traditional approaches in behavioural change.

**Keywords** Blood donation · Motivation · Means-end chain · Communication

**JEL Classification** I10 · I31

## Introduction

There is growing concern about the sufficiency of blood in saving lives of many patients. This is resulted from the increasing need for blood transfusion that associated with accidents and injuries, diagnostic and treatment options, and new medical regimens and procedures. Many countries depend on voluntary non-remunerated donation to maintain blood bank.

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Various systematic reviews (e.g., Oswalt 1977; Piliavin 1990; Bednall and Bove 2011; Bagot et al. 2016) summarized that blood donation is related to the aspects of (pro)social motivations and personal values. Blood donation is seen as a voluntary action to support the need for blood and, thus, donors contribute to blood bank to the extent that their own utility might be affected. Decision making by donors ultimately determines the stability of blood bank supply. Accordingly, motivational interventions were synthesized to be effective in increasing blood donation (Godin et al. 2012) and an emphasis on personal values was concluded to further facilitate the behavioural change (Masser et al. 2008) since financial and non-financial incentives were ineffective (Niza et al. 2013). Therefore, voluntary participation in blood donation campaigns, or even regular donations without being told to, is likely to be highly dependent on the motivations of individual donors to giveaway their blood.

Understanding the formation of donors' motivations for blood donation would therefore be of particular relevance for policymaking. For example, altruism representing an unselfish concern for the welfare of others has been widely identified as a key driving donors' decision making. Based on past evidences, Evans and Ferguson (2014) conclude that the concept of altruism is made up by a continuum of motivations ranging from abstract 'pure altruism', 'social responsibility', 'reluctant altruism', and 'kin selection' at one end to relatively more abstract 'warmer glow', 'reputation building' and 'hedonism' at the other end. At the current state, such motivations are typically treated as distinct and independent of each other in empirical studies of blood donation behaviour.

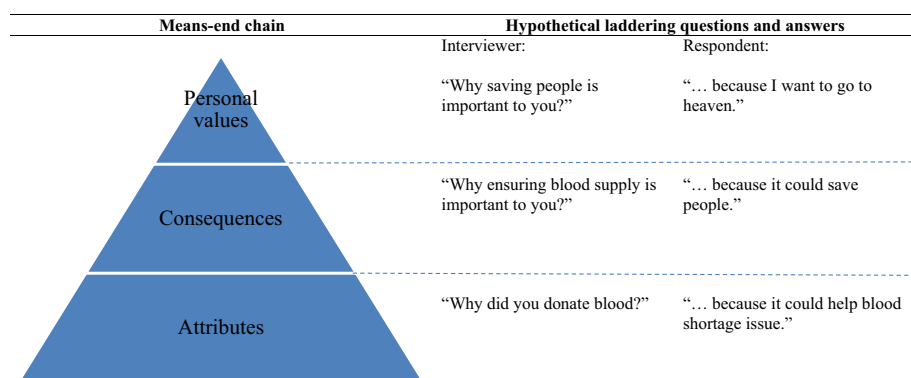
There appears to have a knowledge gap in the content and structure of motivations underlying blood donor's decision making. Uncovering and explicitly understanding the motivations that drive individuals' decisions would help provide a better understanding of what motivates them to donate blood. Such knowledge would benefit policy formulation when developing blood donation campaigns and targeting for improved response by relating to salient motivations that considered important by potential and repeat donors. Knowledge about the motivations that direct blood donation can also be used by non-governmental associations (NGOs) when promoting blood donation activities since such knowledge can be used for effective communication.

The objective of this study is to uncover the motivations and their structure underlying blood donors' decision making using the means-end chain (MEC) model. In real life, the MEC insights are employed to develop advertising strategies. Proliferated from the seminal work of Gutman (1982), the MEC model has been extensively applied to elicit motivations driving consumption decisions (e.g., Chen et al. 2015; Jagel et al. 2015; Arsil et al. 2016), use of agricultural practices (e.g., Lagerkvist et al. 2012; Okello et al. 2013; Tey et al. 2015), and destination visits (e.g., Klenosky et al. 1993; Klenosky 2002;). Menvielle et al. (2014) recently conducted MEC analysis to investigate the drivers behind the purchasing behaviour with respect to foreign medical services.

Importantly, MEC techniques have been applied to understand decision making with respect to behaviours contributing to the public good. For example, Bagozzi and Dabholkar (1994), Smeesters et al. (1999), and Kaciak and Kushner (2009) have uncovered key motivations and the hierarchical organization relevant to recycling. The cognitive hierarchy of recyclers is found to begin with concrete attributes and work through intermediary consequences to the predominant end states, such as values of environmental altruism in voluntary recycling behaviours and values of civic altruism in mandatory recycling programs. Their work shows that there are linkages and hierarchical order between motivational factors.

On that basis, it is vital to advance our understanding of the motivations and their interconnectedness underlying blood donation behaviours since the public contribution to the common good (blood) has always been modest. The MEC approach is also suggested by





**Fig. 1** Hierarchy of means-end chain and hypothetical laddering questions and answers

Pieters et al. (1995) as being appropriate for addressing blood donation issues. By responding to that, our work will add to the previous literature by facilitating a structured process (through MEC modelling) for identifying motivations and their interrelationship based on the cognition of blood donors. This will be achieved through a laddering interview technique in which respondents are pushed to uncover motivations in an increasingly higher cognitive hierarchy. Insights will be collected from both first-time and repeat donors.

## Conceptual framework

In its origin form, according to Gutman (1982), the MEC theory posits that consumption (behaviour) is motivated by the perceived attributes of the products or services, the desired consequences and undesired consequences (for avoidance) implied by these attributes, and the potential of these consequences in fulfilling desired personal values. Such consumer behaviour is assumed (1) to be driven by values, which are defined as desirable end-states of existence and (2) to satisfy the values. In this study, blood donors are conceptualized as consumers (like Aldamiz-echevarria and Aguirre-Garcia 2014) and their blood donation behaviours are thus undertaken in order to fulfil values that the attributes and their associated consequences can help achieve.

Clearly, as depicted in Fig. 1, a hierarchical relationship exists from attributes to consequences and from consequences to values. The MEC theory can facilitate the understanding of their hierarchical associations within cognitive models, encompassing what constitutes blood donation, the perceived consequences associated with these attributes, and the values realized by the consequences. On that basis, we posit that donors make decisions about blood donation based on an increasingly higher structure of motivations with the terminal objective to achieve desired values. This method is, therefore, a plausible framework for eliciting the chain of motivations underlying blood donation behaviours.

As mentioned earlier, (pro)social motivations and personal values have been synthesized as the core drivers of blood donation by various systematic reviews (e.g., Oswalt 1977; Piliavin 1990; Bednall and Bove 2011; Bagot et al. 2016). This knowledge base was useful to our analysis since they suggest that individuals' decision making with respect to blood donation may be driven by social concerns other than self-directed motivations. Donors would have no reason to participate in blood donation campaigns unless their action is perceived to increase



their utility, which could present in many forms. In this sense, the desire for self-fulfilment through blood donation governs their decision making.

Given that values are a central component of the MEC theory, they need to be compared against universal values in order to understand generalizability of donors' pursuit of values. Personal values reflect the personal goals that considered important, desirable and trans-situational to individuals, guiding their life directions (Bardi and Schwartz 2003). Schwartz's (1992) proposed 10 universal values: self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, benevolence, universalism, and spirituality. Recalling the earlier example of altruistic motivations, while most of them refer to attributes and benefits, 'hedonism' specifically serves as an end in the MEC concept vis-à-vis corresponds to a universal value of Schwartz (1992).

Pieters et al. (1995) suggest that the MEC hierarchical structure of blood donation behaviours is unlikely to begin at the most concrete attribute level. This suggests that various aspects of blood donation might have to be considered at higher levels of abstraction. Altruistic motivations (e.g., 'pure altruism', 'social responsibility', 'reluctant altruism', and 'kin selection') offer a set of relevant examples.

Nevertheless, in this study, we consider the aspects defining blood donation for individual donors as attributes. What they lead to is likely to refer to relatively more abstract consequences or benefits, which could serve either as ends in themselves or link to other values. Given the abstractness of motivations with respect to blood donation, we could expect to obtain some rather short MEC hierarchical structures.

Pieters et al. (1995) posit that the hierarchical cognition of motivation can be uncovered using a regular MEC laddering interview technique. The interview begins with a direct question asking respondents to list their motivations for the identified behavior. For each motivation, respondents are prompted with "why is this (motivation) important to you?" Interviewees are questioned sequentially in the same format in order to reveal increasingly more abstract motivations.

An example of laddering interview capturing a primary decision path for a new donor is shown in Fig. 1. From the entry question "Why did you donate blood?", the major motivation (attribute) that led to blood donation was the ability to "*help the blood shortage issue*". This enables the donor to help "*save people*". The consequence is a pre-condition, as perceived by the donor, for achieving his or her ultimate value—to "*go to heaven*" after life. Consequently, the laddering technique can be construed to model the motivational structures of individuals, providing inputs for aggregation in the form of a hierarchical value map (HVM) in the MEC analysis.

## Methodology

### Study area

According to the Malaysian National Blood Centre (2017), in Malaysia, privileges are offered to blood donors. New donors have the access to complimentary outpatient and medical treatment (excluding X-ray and surgical fees) and Class Two wards for 4-month period commencing from the date of donation. Continuing entitlement to these privileges depends on the frequency of blood donation. Blood donors, who have donated more than 50 times, are entitled for these privileges for life.



Despite such incentives, chronic blood shortages remain an ongoing issue in Malaysia. The demand for blood transfusions outpaced the growth in donations (supply) by approximately 37% between 2000 and 2017 (Ling et al. 2018). Seasonal blood shortages are attributed largely to holiday exoduses, especially during public holidays (including the Eid-al-Fitr and Chinese New Year) school holidays and the month of Ramadhan. Natural disasters, to some extent, also cause shocks. While the demand gets higher, response to blood donation campaigns has generally been lacklustre (Kam et al. 2014). New donors contributed only a quarter of the growth in donation (Ling et al. 2018).

In view of this conundrum, the National Blood Centre established the Blood Action Team (BAT) in 2011. The BAT adopted proactive approaches through monitoring, blood forecasting, multi-stakeholder collaboration, and promotions for the recruitment and retention of blood donors (Kam et al. 2014). While this has soothed seasonal blood shortages, the blood donation levels have remained at approximately 2.2%, meeting less than half of the Ministry of Health's target to recruit at least 5% of the Malaysian population (Subramaniam 2015).

Malaysia, therefore, provides a case study to facilitate a better understanding of the motivation underlying the decision making of new and repeat donors. Through the MEC approach, our study complements existing local studies (e.g. Jalalian et al. 2010; Hamid et al. 2013; Ling et al. 2018), which have focused on identifying factors underlying blood donation behaviour.

## Data

Data of this study was collected during blood donation campaigns in Klang Valley of Malaysia over five weekends in July and August 2016. The urban site was selected as most blood donation drives presently focus on urban areas. After blood donors finished donating and took their light refreshment, they were approached by one of three interviewers. The interviewers identified themselves as researchers from a local university and not affiliated with National Blood Centre. Only donors who were at least 18 years old were asked to participate in this study. To ensure that the respondents felt comfortable to share their views on blood donation, the interviewers elaborated our interest in understanding how they, as donors, think about blood donation and indicated that the collected information would be generalized so that no individual could be identified. At the end of interview, respondents received a light token (mineral water, biscuits or soy milk) as compensation for their participation.

A total of 227 respondents (31 first-time donors and 196 repeat donors) participated in one-on-one interview using soft laddering technique. This technique was preferred over hard laddering technique since the sample size of first-time donors was anticipated to be small (Costa et al. 2004) and previous knowledge about cognitive structures with respect to blood donation behaviours was limited in Malaysian context (Grunert and Grunert 1995). Our sample sizes, nevertheless, have met the minimum requirement suggested (20 respondents) by Reynolds and Gutman (1988) as suitable to obtain significant cognitive paths.

The first process of soft laddering technique aims to identify an entry concept (Olson 1988). Reynolds and Gutman (1988) suggest that the entry concept can be identified through a direct categorization or sorting task for respondents to identify basic distinctions that associated with the stimuli (e.g., product or service) from their own perspective. Such direct elicitation procedure is recommended in exploratory settings given its "natural speech" nature (Bech-Larsen and Nielsen 1999). In this study, respondents were asked to come up with the main reasons for donating blood (repeatedly).

Their answers were the entry concepts and led us to the second process of soft laddering technique to identify linked meanings (Olson 1988). Following Reynolds and Gutman (1988),



the entry concepts were used as the starting point for soft laddering questioning process with “why is that (a reported reason) important to you?” Their response was then used as the subject of the next “why is that (the response) important to you?” question. The questioning process continued to push respondents to reveal hierarchically higher concepts to which it was associated until a point (question) where they struggled to provide an answer. This was taken as the end point in the MEC. Such open-ended questions were designed to encourage respondents to give responses that are specific to their own thoughts using their own words.

After the soft laddering interview, respondents were asked about their demography. Their demographic profile is presented in Table 1.

## Means-end chain analysis

The transcripts of the MEC interviews were analysed in three procedures as recommended by Reynolds and Gutman (1988). The same procedures are followed by many MEC studies (e.g., Arsil et al. 2014; Tey et al. 2015).

The first procedure involved content analysis on a spreadsheet. The transcripts were studied for understanding content of respondents’ responses. Clarification was sought from the interviewers when necessary. Based on the understanding, each element was classified into attributes, consequences, or values. Next, a master code was assigned to similar contents. Master codes were developed according to various review studies with respect to blood donation (e.g., Oswalt 1977; Piliavin 1990; Masser et al. 2008; Bednall and Bove 2011; Godin et al. 2012; Niza et al. 2013; Evans and Ferguson 2014; Bagot et al. 2016). Similar master codes were aggregated under a common heading. These processes were carried out by two coders independently. Their disagreements were resolved jointly. Master codes identified in this study are presented in Table 2.

The second procedure involved developing a summary implication matrix (SIM) to identify linkages between master codes. Using MECAnalyst computer software, the master codes were built into SIM in which the rows and columns refer to the master codes developed in the previous content analysis. A number in the matrix represents the frequency that each pair of master codes was linked together in the MECs. When viewed collectively, direct and indirect links are observed. Consider a MEC of  $A \geq B \geq C$ , a direct link moves from A to B and from B to C, and an indirect link moves from A to C. Treating them as different types of measures and focusing solely on the number of direct linkages would underweight the importance of linkages recoded for longer MECs (with more indirect linkages) (Olson and Reynolds 1983). Therefore, both direct and indirect links were treated as equivalent measures and their frequency of linkages was summed up across respondents.

Using the SIM, the final procedure involved constructing a HVM—a tree-link network for first-time donors and repeat donors. The main task here was selecting a cutoff value to eliminate insignificant cells and capture the dominant linkages in the HVM. It is not a straight forward exercise, and recommendations with respect to cutoff value vary across researchers. A cutoff value of between three and five is recommended for a small sample size (Reynolds and Gutman 1988). Alternatively, a cutoff value is determined by at least 5% of respondent size (Klenosky et al. 1993). Another recommendation seeks a cutoff value capturing 60–70% of linkages (Pieters et al. 1995). Importantly, researchers are encouraged to experiment with multiple cutoff values to identify the most manageable HVM (Leppard et al. 2004).

Despite varied recommendations, we strived to reach a balance and ran trials with multiple cutoff values in constructing HVMs. In the case of first-time donors, the outputs represented 75.7% (cutoff value of three), 63.9% (cutoff value of four), and 56.7% (cutoff value of



**Table 1** Demographic profile of respondents ( $N = 227$ )

	First-time donors ( $n = 31$ )		Repeat donors ( $n = 196$ )	
	Count	Percentage	Count	Percentage
Times of donation				
1 time	31	100	–	–
2–10 times	–	–	123	62.8
11–20 times	–	–	42	21.4
21–30 times	–	–	17	8.7
> 30 times	–	–	14	7.1
Gender				
Male	15	48.4	137	69.9
Female	16	51.6	59	30.1
Age				
< 25 years old	9	29.0	31	15.8
26–35 years old	16	51.6	67	34.2
36–50 years old	6	19.4	62	31.6
> 51 years old	0	0.0	36	18.4
Ethnic				
Malay	5	16.1	35	17.9
Chinese	18	58.1	138	70.4
Indian	7	22.6	19	9.7
Others	1	3.2	4	2.0
Marital status				
Married	13	41.9	96	49.0
Single	18	58.1	94	47.9
Divorced	0	0.0	6	3.1
Education level				
Secondary	11	35.5	58	29.6
Certificate and diploma	6	19.4	45	23.0
Degree	10	32.3	77	39.3
Postgraduate	4	12.9	16	8.1
Income level				
< RM2,000	10	32.3	40	30.5
RM2,001–RM4,000	11	35.5	75	38.3
RM4,001–RM6,000	5	16.1	34	17.3
RM6,001–RM8,000	2	6.5	15	7.7
RM8,001–RM10,000	2	6.5	16	8.2
> RM10,001	1	3.2	16	8.2

five) of linkages. In the case of repeat donors, the outputs returned 72.7% (cutoff value of three), 63.2% (cutoff value of four), and 51.8% (cutoff value of five). Beyond the statistical consideration, the resultant HVMs presented a continuum ranging from high complexity (at cutoff value of three) to over simplicity (at cutoff value of five). Therefore, in both cases of first-time and repeat blood donors, the HVMs resulting from the cutoff value of four was selected.



**Table 2** Master codes in the means-end chain analysis

Master code	Description
<i>Attributes</i>	
Replenish blood cells	Regenerate new blood cells to replace aged blood cells
Save people	Save people who rely on blood transfusion to survive
Help people	Help people who need blood transfusion
<i>Consequences</i>	
Charity	Doing charity to help the needy without asking for return
Good deeds	A good and noble action to help the needy
Good for own health	Beneficial to blood donors' health
Increase blood supply	Increase the blood supply in blood bank
Curiosity	Get to know about the process of blood donation
Downstream indirect reciprocity	Blood donors have a greater chance of receiving blood transfusion in the future if needed.
Prepare for unpredictable	Accidents happens unexpectedly and that is when blood supply are needed
Blood circulation	Improve own health with better blood circulation
Self-capability to donate	Qualified and have the capacity to donate blood
<i>Values</i>	
Self-satisfaction	Satisfied with own-self's action
Self-awareness	Aware of the society's needs
Collectivism	A responsibility to help family
Social responsibility	An obligation to benefit the society at large
Role model	Set an example to be imitated by children and colleagues
Humanitarianism	Humane to help the needy
Happy	Happy for helping the needy
Personal moral norms	A moral duty to help the needy
Facilitate own work	Set an example to subordinates for facilitating future work
Love toward family	A sign of love for family
Better life	Better life

## Findings

The resultant HVMs, in which MEC elements were positioned according to their individual abstractness ratio, derived from cutoff values of four are presented in Figs. 2 and 3 respectively for first-time and repeat blood donors. Ranged between 0 and 1, abstractness ratios indicate the level of abstraction of each master code being an attribute, a consequence or a value in HVMs. A low abstractness ratio represents a master code being an attribute. A high abstractness ratio refers a master code being a value. Their boxes were shaded in light grey colour to represent low centrality index and dark grey colour to represent high centrality index. Ranged between 0 and 1, centrality indices indicate the proportion of linkages running through a particular master code. A high centrality index indicates a master code being a dominant element. Three different thicknesses are also used to mark the frequency of links mentioned by respondents. Boldest links (with 12 counts or more) indicate those considered the most important by respondents.



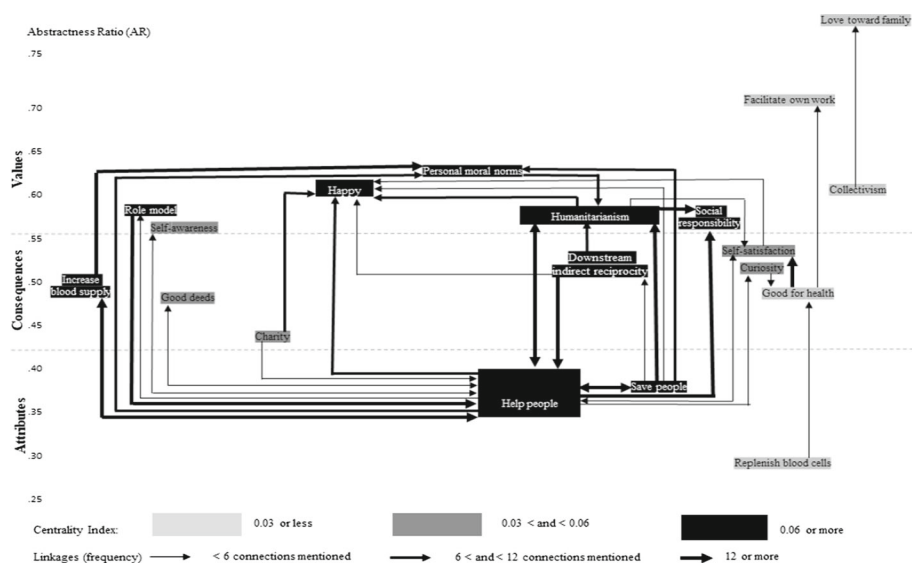


Fig. 2 Hierarchical value map (at cut-off level of 4) for first-time blood donors

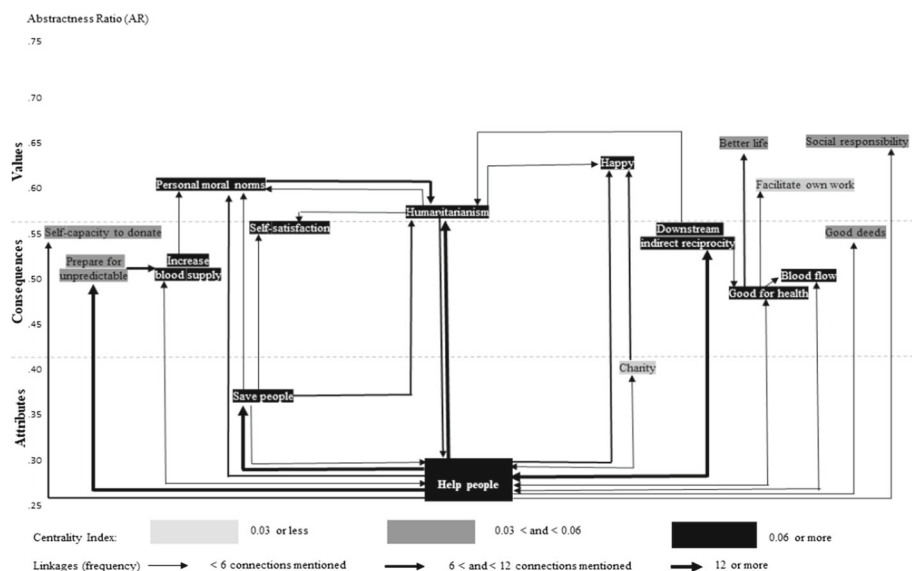


Fig. 3 Hierarchical value map (at cut-off level of 4) for repeat blood donors

Based on the HVMs, it is suggested that both first-time and repeat blood donors viewed blood donation as being constituted of attributes 'replenish blood cells', 'save people' and 'help people' carrying abstractness ratios below 0.40. Of these, 'help people' recorded the highest centrality index of 0.49 and was perceived by the respondents to lead directly to consequences. The dominant attribute was linked to consequences 'good deeds', 'increase blood supply' and 'curiosity' in the case of first-time donors; 'good deeds', 'increase blood

supply', 'charity', 'good for own health', 'indirect downstream reciprocity', 'prepare for unpredictable', 'blood flow', and 'self-capability to donate' in the case of repeat donors.

It is noted that forward–backward arrows present between the attribute 'help people' and most of these consequences. For instance, the attribute 'help people' was linked to the consequence 'increase blood supply' and vice versa. This does not necessarily mean inter-relationship, but rather illustrates how respondents considered blood donation at a high abstraction level and indirectly linked a consequence (e.g., 'charity') to another higher-level consequence (e.g., 'increase blood supply') through the attribute 'help people'.

As indicated by the boldest arrows, the dominant attribute 'help people' was primarily linked to the consequence 'increase blood supply' and 'indirect downstream reciprocity' as perceived by first-time and repeat blood donors respectively. Both key consequences had the highest centrality index of 0.09 among all consequences, and were viewed as leading to the primary value 'humanitarianism' indirectly (through 'moral duty') by first-time donors and directly by repeat blood donors. On the other hand, the primary value carrying central index of 0.16 and 0.17 in the respective case of first-time and repeat blood donors was also perceived to link directly from the dominant attribute 'help people' without going through any consequence. Interestingly, the primary value 'humanitarianism' was seen as leading to the secondary value 'happy', which has a centrality index of 0.12 and emerged as the end of these dominant pathways.

Other values that expressed by both first-time and repeat blood donors were 'self-satisfaction', 'social responsibility', 'personal moral norms', 'happy', and 'facilitate own work'. The values 'self-awareness', 'collectivism', and 'love toward family' were additionally significant to first-time blood donors. Repeat blood donors sought to achieve the value 'better life'.

## Discussion

As pointed out in the early of this study, research uncovering and understanding the formation of motivations with respect to blood donation has been scarce. We addressed that research gap by identifying the content and the structure of motivations underlying first-time and repeat blood donation decision-making in this study. The concept of the MEC is of particular importance to understand motivational issue (Pieters et al. 1995). Soft-laddering interview technique was employed to interview both first-time and repeat blood donors, whose behaviour (blood donation) was identified as the starting point for our MEC investigation.

Past studies have generally posited that motivations underlying blood donation present at the same level and affect donors' behaviours directly. Instead, in this study, we developed hierarchical structures of blood donors' motivations, in which lower-level and relatively concrete attributes of blood donation served as means to attain higher-level and relatively abstract personal values as ends. Their cognitive links demonstrate the presence of different abstraction degrees among motivations and their connections in the hierarchical structures of blood donors. Such information become clear when we consider the main cognitive ladders below.

The lower-level portion of hierarchical structures was developed by asking why respondents would want to donate blood for the first time/repetitively. Our analysis through the HVM suggested that the attribute 'help people' was the central motivation underlying decision-making with respect to first-time and repeat blood donation. It was perceived as leading to the dominant consequences 'increase blood supply' and 'indirect downstream reciprocity'



by first-time and repeat blood donors respectively. In turn, they were believed to help blood donors achieve the dominant value ‘humanitarianism’ at the higher-level portion.

Although humanitarianism is conceptualized as similar as altruism in the literature (see Leibrecht et al. 1976), a distinction exists as first-time and repeat blood donors sought different primary consequence for achieving the value. The consequence ‘increase blood supply’ of blood bank, which linked to ‘personal moral norms’, was sought by first-time blood donors. This suggests that they primarily aimed to increase the welfare of other people through blood donation without explicit rewards or are motivated by the non-use value of altruism in short. In the systematic review of Bagot et al. (2016), altruism was synthesized as the most important motivation underlying first-time blood donation. However, it is necessary to understand rewards beyond material returns (Batson et al. 2002). The benefit ‘indirect downstream reciprocity’ that sought by repeat blood donors represents a belief in which they have a greater chance of receiving blood transfusion in the future if needed. This perceived spatial return suggests that the use value of benevolence is a primary personal motivation to repeat blood donation, endorsing the synthesis of Bednall and Bove (2011).

Both altruism (universalism) and benevolence are known as self-transcendence (Schwartz 1992). According to Maslow (1971), “transcendence refers to the very highest and most inclusive or holistic levels of human consciousness, behaving and relating, as ends rather than means, to oneself, to significant others, to human beings in general, to other species, to nature, and to the cosmos”. This suggests that blood donation is intended for satisfying the end states (values) that the associated attributes and consequences can help achieve, not for the attributes and/or consequences per se.

Beyond the primary consideration above, the other values discovered in this study can also be interpreted in the light of Schwartz’s (1992) personal value theory. Values ‘self-satisfaction’ and ‘happy’ are related to hedonism and known as warm glow in the general literature of donation (Andreoni 1990). This may suggest that blood donors think there are positive emotional gains from the act of blood donation. Values ‘social responsibility’ and ‘moral duty’ are related to conformity. Blood donors act according to their sense of social and moral obligation of performing helping behaviours. Values ‘facilitate own work’ and ‘role model’ are related to self-direction for reputation building. Values ‘responsible toward family’ and ‘love toward family’ are related to benevolence for preserving and enhancing the welfare of family members.

Interestingly, we found a direct link from an attribute to a value. For example, the links ‘help people’-‘happy’, ‘help people’-‘moral duty’, ‘help people-humanitarianism’, and ‘help people-social responsibility’ present in the cognitive structures of both first-time and repeat blood donors. These links are similar to those direct effects of motivators on blood donation generally found in the literature, and may suggest that blood donors viewed helping people as being of value in itself, even when not linked to consequences. We are also mindful that it may also be the case that blood donors thought of the direct links as obvious that they cannot articulate it.

## Implications and conclusions

In this study, we have demonstrated that the MEC approach employing a structured laddering interview technique is useful to uncover the content of motivations and their relationships in governing blood donation behaviours. The act was revealed to be primarily driven by the attribute ‘help people’, the consequences (‘increase blood supply’ as perceived by first-time blood donors and ‘indirect downstream reciprocity’ as perceived by repeat blood donors)

associated with the attribute and the belief that the consequences can lead to the fulfilment of the value 'humanitarianism'. Such hierarchical relationships suggest that blood donation is thus undertaken in order to satisfy values that held salient by blood donors.

The insights explaining the act of blood donation in this study can be used in the formulation of blood donation policy. This approach is relevant since blood donation is considered from the blood donors' point of view. In this study, the main hierarchical relationships suggest that blood donation is primarily undertaken in order to satisfy altruism and benevolence that held salient by first-time and repeat blood donors respectively. Based on these desired end-states, communications of blood donation campaigns can be specifically designed for recruiting first-time blood donors and retaining them and repeat blood. Typical recommendations, for example, in response to benevolence are to employ a benevolent message focused on the personal benefits (Ferguson et al. 2008) or framed in terms of loss of the personal benefits of blood donation (Bednall et al. 2013). While such an approach helps communicate the potential returns of (in)action, there lacks a connection to their mental models on how (the process) blood donation can help achieve their desired end-states.

Given that the act of blood donation is carried out for the values that the attributes and the associated consequences can help achieve, communicating the presence of primary pathways could be an effective way of enhancing the impacts of blood donation campaigns. As found in this study, the attributes 'help people', 'save people', and 'replenish blood cells' are the means to achieve their associate consequences and/or values. Ignorance to incorporate these entry points in communications is unlikely to connect (potential) blood donors with the act of blood donation. It is in this sense that cognitive MEC pathways can be applied to review and improve the public communications. Influence strategies should be enacted for inviting (potential) blood donors into the sequence of behaviours necessary to reach the desired values (Pieters et al. 1995).

Improved communication contents that incorporated the hierarchical links of motivations would be in congruent with the public's cognition and can lead them to more informed decision making with respect to blood donation. Advertising industry has long been embarking on MEC insights to develop influence (communication) strategies. This perspective on changes in behaviour varies from the traditional acceptance that behaviours can be intervened through perceptions, attitudes, and beliefs about consequences of (in)action. A new focus should be placed on instrumental pathways linking low-and high-level motivations for making communications of blood donation campaigns self-relevant and compelling. The resultant outcomes of this relatively new perspective are likely to be more successful than traditional approaches.

While we believe that the MEC insights will empower effective blood donation campaigns, there are generalisation limitations due to the specific study area and qualitative approach of this paper. A larger scale of research is needed to assess the content and structure of motivations in the larger population in Malaysia and other countries. Hard laddering-interview technique, which is quantitative in nature, is recommended for any large-scale MEC studies. Motivations that synthesized in review studies (e.g., Oswalt 1977; Piliavin 1990; Masser et al. 2008; Godin et al. 2012; Bednall and Bove 2011; Niza et al. 2013; Bagot et al. 2016) can be used as a reference for building up a list of options in the hard laddering questionnaire. However, the questionnaire design should be handled with care as the synthesized motivations are meant for generalisation and, as revealed in our study, micro information on motivations are equally important too. In order to avoid potential biases, a good research practice is to precede the quantitative research with a small-scale qualitative based preliminary MEC study for verifying the shortlisted motivations.



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