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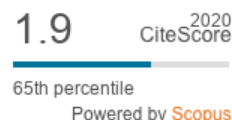
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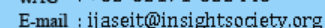
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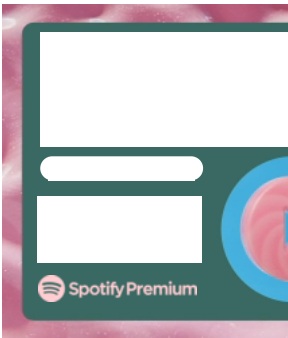
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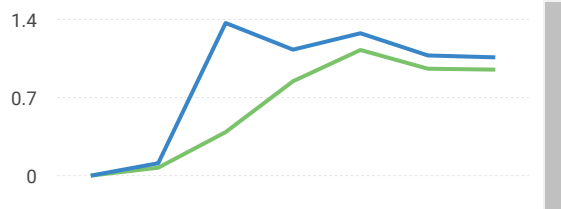
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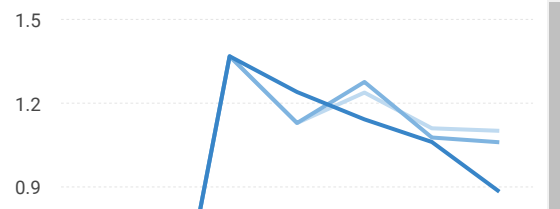
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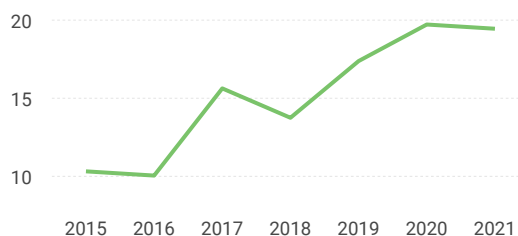


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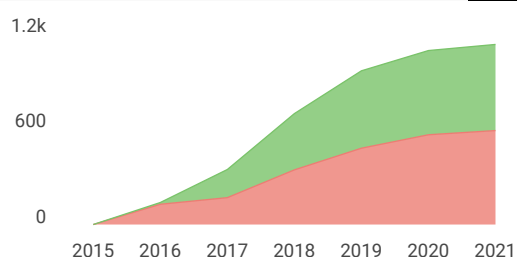
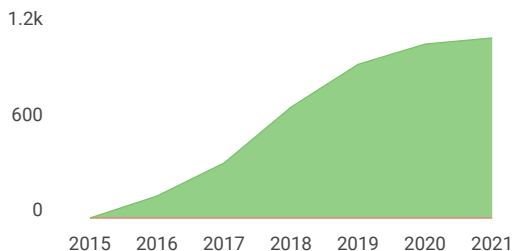
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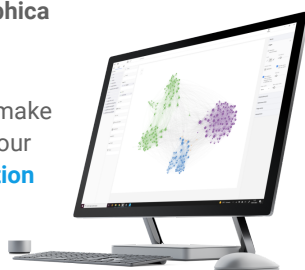
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A

Agus Haryanto 6 months ago

I see this journal has 51% quartile for engineering and 59% for agriculture since 2021. This mean q2. But in scimagojr still q3. What's wrong?

reply



**Melanie Ortiz** 6 months ago

SCImago Team

Dear Agus, Thank you for contacting us.

As you probably already know, our data come from Scopus, they annually send us an update of the data. This update is sent to us around April / May every year.

The calculation of the indicators is performed with the copy of the Scopus database provided to us annually. However, the methodology used concerning the distribution of Quartiles by Scopus is different from the one used by SCImago.

For every journal, the annual value of the SJR is integrated into the distribution of SJR values of all the subject categories to which the journal belongs. There are more than 300 subject categories. The position of each journal is different in any category and depends on the performance of the category, in general, and the journal, in particular. The distribution of Quartiles cannot be considered over the journals' total amount within a Category. In the case of SCImago, the distribution has to be considered with the formula Highest-SJR minus Lowest-SJR divided into four.

Best Regards,

SCImago Team

W **Warka** 7 months ago

Finally, my paper has been published in Vol. 12 (2022) Number 4.

Thank you IJASEIT editor team.

reply

P **Projo Danoedoro** 10 months ago

I submitted an article to this journal on June 2020 (almost 2 years ago). After 9 months, my paper had been accepted, and I was asked to pay a fee. I paid the fee immediately. However, until now my paper is not published yet, and even other papers that were accepted several months later after mine have been accepted. I have sent emails several times to the editor but until now there is no response.

reply

P **Projo Danoedoro** 7 months ago

Finally my paper has been published in Vol. 12 (2022) No. 3. I think the Editor has responded my complain properly. I really appreciate it. Thanks a lot ! It's great.

Anyway, my complaint would not come up in this forum if the journal responded my email more quickly, so I suggested that all complaints from the accepted papers' authors should be replied ASAP.

W **Warka** 9 months ago

I have been waiting for 1,6 years. Until now my paper is not published yet. The Editor said will publish in August 2022.

P **Projo Danoedoro** 10 months ago

Sorry, I mean "even other papers that were accepted several months later after mine have been PUBLISHED"

S **shaymaa** 1 year ago

i want to submit my artical

reply



**Melanie Ortiz** 1 year ago

SCImago Team

Dear Shaymaa, thank you very much for your comment, we suggest you look for the author's instructions/submission guidelines in the journal's website. Best Regards,  
SCImago Team

S **SHAYMAA** 1 year ago

I would like to publish in your article

reply



**Melanie Ortiz** 1 year ago

SCImago Team

Dear Shaymaa,  
Thank you for contacting us.  
We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.  
Unfortunately, we cannot help you with your request, we suggest you visit the journal's homepage (See submission/author guidelines) or contact the journal's editorial staff , so they could inform you more deeply.  
Best Regards, SCImago Team



**Evi** 1 year ago

Dr Nurhamidah..I sent an email for you asking about my paper which already accepted. Please check your email. It is so hard to get email replied by editors. Thank you.

reply

**Evi** 7 months ago

Thankfully my paper has been recently published. Thank you IJASEIT editor team.

**R** **Rihab** 1 year ago

Hello Evi,

Can you plz tell me how you submitted your paper in International Journal on Advanced Science, Engineering and Information Technology (IJASEIT)  
i registered for an account but there is no submission link in the website!!!!

Thank you

**Melanie Ortiz** 1 year ago

SCImago Team

Dear Evi,

Thank you for contacting us.

We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

Unfortunately, we cannot help you with your request, we suggest you contact the journal's editorial staff , so they could inform you more deeply.

Best Regards, SCImago Team

**N** **Najlaa Saad Ibrahim Alsharabi** 2 years ago

Dear Editor (International Journal on Advanced Science, Engineering and Information Technology)  
Greeting

I write to you, why my article (Employing several methods to estimate the generalized Liu parameter in multiple linear regression model) accept but don't publisher at now, also the articles for my fellow researchers, such as:

1. Determine the most important factors affecting breast cancer in Iraq
2. The Kumaraswamy Distribution: Statistical Properties and Application
3. Using Intervention Analysis Models in Time Series to Study the Impact of Sectarian and Terrorist Events of 2006 on the Industrial Sector in Iraq
4. Estimation of Occurrence Rate for Alpha-Series Process in Rayleigh Distribution

Najlaa Saad Ibrahim Alsharabi  
fasb183@gmail.com

reply

**D** **Dr. Nurhamidah** 1 year ago

Dear Sir/Madam,

Thanks for your interest to our journal. Detail information is available on our website, please



follow the guidance through this link :

[http://ijaseit.insightsociety.org/index.php?option=com\\_content](http://ijaseit.insightsociety.org/index.php?option=com_content)



**Melanie Ortiz** 2 years ago

SCImago Team

Dear Najlaa,  
Thank you for contacting us.  
We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.  
Unfortunately, we cannot help you with your request, we suggest you contact the journal's editorial staff , so they could inform you more deeply.  
Best Regards, SCImago Team



**Nuraisa** 2 years ago

I have submitted a paper to IJASEIT for almost four months now. There is no further information about my submission progress. There is no response from the editorial team in all contact emails and numbers they provide on their website. Please let me know how to reach IJASEIT editorial team.

reply

D

**Dr. Nurhamidah** 1 year ago

Dear Sir/Madam,

Thank you for submitting your manuscript to our journal. Due to the large amount of papers in queue, it delays your paper process. We apologize for any inconvenience. Please inform us your ID submission. Please, kindly contact me through this email address :  
[nurhamidah@eng.unand.ac.id](mailto:nurhamidah@eng.unand.ac.id)

Regards - Editorial Board.  
Nurhamidah



**Melanie Ortiz** 2 years ago

SCImago Team

Dear Nuraisa,  
thank you for contacting us.  
Unfortunately, we cannot help you with your request.  
Best Regards, SCImago Team

M

**Mohamad** 2 years ago

How many days take to review the paper?

reply

D **Dr. Nurhamidah** 1 year ago

Dear Sir/Madam,

Thank you for submitting your manuscript to our journal. Due to the large amount of papers in queue, it delays your paper process. We apologize for any inconvenience. Please inform us your ID submission. Please kindly send the email to nurhamidah@eng.unand.ac.id. We will do the review.

Regards - Editorial Board.

Nurhamidah



**Melanie Ortiz** 2 years ago

SCImago Team

Dear Mohamad,

Thank you for contacting us.

Unfortunately, we cannot help you with your request, we suggest you visit the journal's homepage or contact the journal's editorial staff, so they could inform you more deeply.

Best Regards, SCImago Team

A **Ahmad** 2 years ago

Hello

I would ask you about the rank of this journal; it is Q1 or Q2.

Thx

reply

D **Dr. Nurhamidah** 2 years ago

Dear Mr. Ahmad,

Thank you for the question. Our Journal is Q3 right now. Last year was Q2.

Regards - Editorial Board of IJASEIT

Dr. Nurhamidah



**Melanie Ortiz** 2 years ago

SCImago Team

Dear Ahmad, thank you very much for your request. You can consult that information just above. Best Regards, SCImago Team

S **smegnew Asemie** 2 years ago

We have a manuscript which we would like to publish in your journal. However, we were not able to send it to you because we are facing some difficulty in finding which link we should follow. We were wondering if you could help us with that. We would really appreciate it. Thanks in advance!

reply

**Melanie Ortiz** 2 years ago

SCImago Team

Dear Sir/Madam,

thank you for contacting us.

We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

Unfortunately, we cannot help you with your request, we suggest you visit the journal's homepage or contact the journal's editorial staff, so they could inform you more deeply.

Best Regards, SCImago Team

A

**amrin** 2 years ago

selamat sore

kmren jurnal saya sudah di pulbikiasu di IJAST tapi ketika di cek wibsite scopus tidak bisa ditemukan..

mhom penjelasan.....

reply

D

**Dr. Nurhamidah** 2 years ago

Salam pak Amrin,

Terimakasih atas pertanyaan nya.

IJAST tidak sama dengan IJASEIT. Jurnal kami terindex scopus. Silahkan bapak cek website resmi IJASEIT melalui link berikut :

<http://ijaseit.insightsociety.org/>

Salam hangat,

Dr. Nurhamidah

N

**Norizan Mat Diah** 2 years ago

adakah masih scopus

**Melanie Ortiz** 2 years ago

SCImago Team

Dear Amrin, thank you very much for your comment. We suggest you consult the Scopus database directly. Keep in mind that the SJR is a static image (the update is made one

time per year) of a database (Scopus) which is changing every day.

Best Regards, SCImago Team



**Shah Mohammad Polash** 2 years ago

Hi,

Thanks for writing this in-depth review. I read your website.

In fact, I found the information I was looking for in your article. It's really helpful.

I have benefited from reading your article.

Thank you very much.

reply

D

**Dr. Nurhamidah** 2 years ago

Dear Mr. Shah Mohammad Polash,

Thanks for your testimony, We really appreciate it!

Good luck!

Regards,

Dr. Nurhamidah



**Melanie Ortiz** 2 years ago

SCImago Team

Dear Shah, thanks for your participation! Best Regards, SCImago Team

O

**osfar sjofjan** 2 years ago

Dear sir,

Is it possible i am publish thi journal. Please give me guidance for that,

regards osfar

reply



**Melanie Ortiz** 2 years ago

SCImago Team

Dear Osfar, thank you very much for your comment, we suggest you look for author's instructions/submission guidelines in the journal's website. Best Regards, SCImago Team

A

**Ayman Ibrahim** 3 years ago

Dear Authors and SCImago Team

Please, I want to explain to everyone that there was a misunderstanding that occurred.

The International Journal on Advanced Science, Engineering and Information Technology, contacted me through one of the officials and the editor-in-chief, and they clarified the matter and removed the misunderstanding and the wrong viewpoint.

Thank you for your interest. You prove to me that my perception of the Journal was wrong.

Thanks to the International Journal on Advanced Science, Engineering and Information Technology team.

Many thanks for SCImago Team. Please, I need to remove my previous message.

My sincere greetings, good luck to all

Dr. Ayman Ibrahim

reply



**Melanie Ortiz** 3 years ago

SCImago Team

Dear Ayman,

Thank you for contacting us. Your post has been removed.

Best Regards, SCImago Team

A **asal** 3 years ago

Hello

I wanna submit my manuscript to this journal but after registration, there is no submission link and also there is no provided any email address to send manuscripts, I have sent an email to the support contact of this journal but there is no response.

Anyone can help me?

Thanks

reply

T **Tjokorda** 2 years ago

go to edit profile,

down there in the middle select role as author (a little bit in the hidden position)

after that you can do online submission

best

Tjokorda

T **tirta** 2 years ago

i have the same experience.....no submission link.....so funny

**Melanie Ortiz** 3 years ago

Dear Asal,

thank you for contacting us.

Unfortunately, SCImago can not help you with your request, we suggest you contact the journal's editorial staff again , so they could inform you more deeply.

Best Regards, SCImago Team

Z

**Zhanna** 3 years ago

Good day!

Is is Journal in Scopus?

reply

**Melanie Ortiz** 3 years ago

Dear Zhanna,

Thank you very much for your comment.

All the metadata have been provided by Scopus /Elsevier in their last update sent to SCImago, including the Coverage's period data. The SJR for 2019 was updated on June 2020, 11th. We suggest you consult the Scopus database directly to see the current index status as SJR is a static image of Scopus, which is changing every day.

Best Regards, SCImago Team

W

**Waspodo Tjipto Subroto** 3 years ago

Dear Elena

Clarifi please, what the meaning of coverage 2015-2020?

If coverage 2016-2019, what is this will be discontinued of Scopus indexed, in 2020 ?

Please clarify about coverage in Scimago.

Thanks.

reply

A

**Adeniyi Gbadebo omoniyi** 2 years ago

Please I submitted a paper to this journal around may. I have not gotten any reply from them. Presently, I am even finding it difficult to get linked up with their tracking site. Please help me out

**Melanie Ortiz** 2 years ago

Dear Adeniyi,

thank you for contacting us.

We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

Unfortunately, we cannot help you with your request, we suggest you contact the journal's editorial staff , so they could inform you more deeply.

Best Regards, SCImago Team



**Melanie Ortiz** 3 years ago

SCImago Team

Dear Waspodo, thank you very much for your comment.

SJR is a portal with scientometric indicators of journals indexed in Scopus. All the metadata have been provided by Scopus /Elsevier, including the Coverage period data. We suggest you consult the Scopus database directly as SJR is a static image of Scopus, which is changing every day.

For further details regarding this matter, please contact Scopus Support here:

[https://service.elsevier.com/app/answers/detail/a\\_id/14883/kw/scimago/supporthub/scopus/](https://service.elsevier.com/app/answers/detail/a_id/14883/kw/scimago/supporthub/scopus/)

Best Regards, SCImago Team

H **Haitham Shiaibth Chasib** 3 years ago

Dear staff,I submitted my paper on 11-05-2020 till now no answer.  
could you please contact me with specific person about this issue?

reply

M **Mohammed A.** 3 years ago

some time they responses after 1 year.



**Melanie Ortiz** 3 years ago

SCImago Team

Dear Haitham,

thank you for contacting us.

We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

Unfortunately, we cannot help you with your request, we suggest you contact the journal's editorial staff , so they could inform you more deeply.

Best Regards, SCImago Team

H **Henderi** 3 years ago

How long peer-review process fo a paper in this journal? Please make info to me... Thank you

reply



**Melanie Ortiz** 3 years ago

SCImago Team

Dear Henderi,  
thank you for contacting us.  
Unfortunately, we cannot help you with your request, we suggest you to visit the journal's homepage or contact the journal's editorial staff , so they could inform you more deeply.  
Best Regards, SCImago Team

|

**Isaac Oamen Festus** 3 years ago

Looking forward to submitting papers soon

reply



**Melanie Ortiz** 3 years ago

SCImago Team

Dear Isaac, thanks for your participation! Best Regards, SCImago Team

F

**Firas K. AL-Zuhairi** 3 years ago

Dear Sir,  
I submitted a paper to the International Journal on Advanced Science, Engineering and Information Technology on 13-June-2019, but till now I haven't received any reply from them, I sent many emails to managing editor  
Prof. Rahmat about the status of my article and he never answered about it, what shall I do?

Best Wishes

reply



**Melanie Ortiz** 3 years ago

SCImago Team

Dear Firas, thank you very much for your comment. Unfortunately, we cannot help you with your request, we suggest you to contact another member of the journal's editorial staff so they could inform you more deeply. Best Regards, SCImago Team



**Igor** 3 years ago

Qual o Qualis dessa revista?

reply





**Melanie Ortiz** 3 years ago

Dear Igor, could you please expand your comment? Best Regards, SCImago Team



**Nasyiin Faqih** 3 years ago

How about the Q rank of this journal

reply

N

**nh** 3 years ago

Q2

S

**suryanto** 3 years ago

I have waited more than 1 year after submit a manuscript and sent some e-mail for editor but no notification about our manuscript. If the journal has abundant manuscript to be reviewed, editor should be reject it as soon as possible for convenience the authors to publish it in the other journal. Finally, I withdrew my manuscript. Bad handling for author.

reply



**Melanie Ortiz** 3 years ago

SCImago Team

Dear user, thanks for your participation! Best Regards, SCImago Team

A

**Amani** 3 years ago

Greetings,  
Do you accept manuscripts in the field of statistics  
Regards,

reply



**Melanie Ortiz** 3 years ago

SCImago Team

Dear user,  
thank you for contacting us.  
Sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.  
Unfortunately, we cannot help you with your request, we suggest you to visit the journal's homepage (see Scope) or contact the journal's editorial staff, so they could inform you more deeply. Best Regards, SCImago Team

D **Dr GSR** 4 years ago

Greeting!!

Recently (on 15-07-2019) I was submitted my manuscript to this journal, today (23-09-2019) It is accepted.

I read so many mails about delay of decision on review process. It may be depending on flow of submission, availability of reviewers and many things.

Thank you for not delaying my process....

reply

T **Tukang.tadah** 3 years ago

May I ask how many round reviews of this journal based on your experienced?

Regard

Dr Tadah

S **Susan Zwyea** 3 years ago

Can you tell us what was the field of you paper

N **Nh** 3 years ago

Thanks, Dr. GSR!



**Melanie Ortiz** 3 years ago

SCImago Team

Dear user, thanks for your participation! Best Regards, SCImago Team

R **Roaa hamed** 4 years ago

Dear Sir,

I submitted a paper to the journal since 2/6/2018 to be reviewed, till now I haven't received any reply from them, I sent many emails to managing editor Rahmat about the status of my paper and he never answered about it. I wasted my time for a year, what shall I do?

reply

E **Essam Zanelidin** 4 years ago

I registered online via the journal website. I am trying to submit a paper but could not find the paper submission link. Can you please let me know how can I find the submission link.

reply

P **P Naga srinivasu** 4 years ago

Dear Editor IJASEIT,

I had uploaded the paper entitled " A computationally efficient Skull Scraping approach for brain MR Image" with reference number 6040 on 23 june 2018. It is more than 8 months since I had sent you the paper and has sent tons of mails to managing editor Rahmat regarding the same and has never heard back from you. I take this as a platform to request you to please delete the paper from your database so that I can approach a different journal. I had wasted my time for more than 8 months. And nobody takes the responsibility of responding to the author. I am feeling sick. Please look into this matter at your earliest.

reply

I **Irwansyah Ramadhani** 4 years ago

I have also submitted my research since August 18th, 2018. I have not received any review of my research.

R **Roaa hamed** 4 years ago

Dear, P Naga srinivasu

I had uploaded my paper for 9 months before and I didn't receive any answer from the editor just like you.

R **Romisaa** 4 years ago

Welcome,

I have sent a paper to the journal science 26/8/2018 to be reviewed, till now I haven't receive any reply from them, what shall I do?

reply

L **Luca** 4 years ago

Dear Researcher, I am Luca Di Nunzio of the editorial Board of IJASEIT. I apologize for the delay in the review process. In the last months there was an considerable increment of the number of submitted paper and for this reason there can be some annoyance. Please contact me at di.nunzio @ ing.uniroma2.it I will support your case.

T **Toto Iswanto** 4 years ago

Please kindly check in your spam. Because I've ever get same experience

W **Wael Eid** 4 years ago

Dear Sir,

I submitted a manuscript to International Journal on Advanced Science, Engineering and Information Technology at 30-Sep-(i.e 8 weeks ago). And according to author guidelines exists on the official website of the journal, the editor must reply after 8 weeks. Until now i did not receive any notification about the paper status. How can i contact with this journal , they do not reply any emails.

And what is the period of acceptance or rejection?

They do not have any support to reply emails, How i can contact with the editor?

Any journal must support the researches by replying emails and update the official page on the social media.

Please, Give me advice and how i get a confirmation or rejection or withdraw my paper?

Thanks in advance.

reply

L **Luca** 4 years ago

Dear Researcher, I am Luca Di Nunzio of the editorial Board of IJASEIT. I apologize for the delay in the review process. In the last months there was an considerable increment of the number of submitted paper and for this reason there can be some annoyance. Please contact me at di.nunzio @ ing.uniroma2.it I will support your case.

W **Wael Eid** 4 years ago

Dear Sir,

I submitted a manuscript at 30-Sep-(i.e 8 weeks ago). And according to author guidelines exists on the official website of the journal, the editor must reply after 8 weeks. Until now i did not receive any notification about the paper status.

How I can Contact with editor??

Please, I need a help.

Thanks in advance.

reply

L **Luca** 4 years ago

Dear Researcher, I am Luca Di Nunzio of the Editorial Board of IJASEIT. I apologize for the delay in the review process. In the last months there was a considerable increment of the number of submitted paper and for this reason, there can be some annoyance. Please contact me at di.nunzio @ ing.uniroma2.it I will support your case.

J **jagruti** 4 years ago

what is the fees for student author and how many days they take for review and what are the indexing for paper ?

reply

M **mohamed** 4 years ago

How much would you be rating this journal for 2018?



**Elena Corera** 4 years ago

SCImago Team

Please, check out our FAQs <https://www.scimagojr.com/help.php?q=FAQ>

A **Aissa BELLAKHDAR** 4 years ago

what is the period of ( acceptance or rejection) ?

reply



**Elena Corera** 4 years ago

SCImago Team

Dear Aissa,

thank you very much for your comment, unfortunately we cannot help you with your request. We suggest you check author's instructions in journal website. You can find that information in SJR website <https://www.scimagojr.com>

Best Regards,  
SCImago Team

W **WAEAL** 4 years ago

what is the period of ( acceptance or rejection) ?

reply



**Elena Corera** 4 years ago

SCImago Team

Dear Waeal,

thank you very much for your comment. Unfortunately, we cannot help you with your request, we suggest you contact journal's editorial staff so they could inform you more deeply

Best regards,  
SCImago Team



**From Ecuador. South America. Please, what would be the electronic address to send an article**

5 years ago

From Ecuador. South America. Please, what would be the electronic address to send an article

reply



**Pandu** 5 years ago

<http://ijaseit.insightsociety.org/>



**Elena Corera** 5 years ago

SCImago Team

Dear user,

thank you very much for your comment. Unfortunately, we cannot help you with your request, we suggest you contact journal's editorial staff so they could inform you more deeply.

Best Regards,  
SCImago Team

J

**jayaramaiah v.c.** 5 years ago

please let me know the publishing cost

reply



**Pandu** 5 years ago

12 September 2018:

Article processing charges (APCs) / Article Publication Fee: 150.00 (USD)

Source: [http://ijaseit.insightsociety.org/index.php?option=com\\_content](http://ijaseit.insightsociety.org/index.php?option=com_content)



**Elena Corera** 5 years ago

SCImago Team

Dear Jayaramaiah,

we suggest you contact the journal directly.

Best Regards,  
SCImago Team

#### Leave a comment

Name

Email

(will not be published)

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reCAPTCHA  
Privasi - Persyaratan

Submit

The users of Scimago Journal & Country Rank have the possibility to dialogue through comments linked to a specific journal. The purpose is to have a forum in which general doubts about the processes of publication in the journal, experiences and other issues derived from the publication of papers are resolved. For topics on particular articles, maintain the dialogue through the usual channels with your editor.

Developed by:



Powered by:



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Horatio (Satire 1.1.106)

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## Empowerment of Subsistence Craftsmen through the Adoption of Environmentally Friendly Cocodust Production Technology

Dumasari<sup>a</sup>, Wayan Darmawan<sup>b</sup>, Ismangil<sup>c1</sup>, Budi Dharmawan<sup>c2</sup>, Imam Santosa<sup>d</sup>

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E-mail: wayandar@indo.net.id

<sup>c</sup> Faculty of Agriculture, Jenderal Soedirman University, Purwokerto, 53123, Central Java, Indonesia  
E-mail: <sup>1</sup>ismangil.32@gmail.com; <sup>2</sup>b\_dharmawan@yahoo.com

<sup>d</sup> Faculty of Social and Political Sciences, Jenderal Soedirman University, Purwokerto, 53122, Central Java, Indonesia  
E-mail: Scokronegoro@yahoo.com

---

**Abstract**— The adoption of environmentally friendly production technology supports the empowerment of subsistence craftsmen through product diversification. However, a study of cococraft craftsmen in Purbalingga District, Purbalingga Regency Province, Central Java, Indonesia, revealed that the factors restricting the adoption of technology in cocodust production were technological complexity, limited capital, and social rigidity. The craftsmen had little awareness of the functional and economic benefits of cocodust. The adoption of new technology was unsuccessful due to a lack of evaluation of the cocodust characteristic regarding compatible, complex, observable, and triable aspects. Subsistence craftsmen were unsure of the characteristics of the facilitators of new technology, especially concerning economic value, a sense of belonging, production costs, accessibility, and social benefits. The key research output of this in-depth case study was a management scheme that could be used to facilitate technology adoption. The essence of this management scheme was to prompt a change in behavior at each stage of adoption through counseling, networking, sharing, and continuous advocacy. Continuous cocodust productivity would also reduce cococraft waste. Market security and price feasibility were also supporting elements, helping to guarantee additional income and thereby leading to the empowerment of the craftsmen. If the management scheme were to lead to technology adoption, it would provide a solution to the problem of the scarcity of agricultural land. Cocodust products can also be used effectively as a seedling or planting media on organic farms, especially those on the narrow and marginal area.

**Keywords**—adoption; empowerment; product diversification; production technology; subsistence craftsmen.

---

### I. INTRODUCTION

The empowerment of farmers remains one of the top priorities in most developing countries with agriculture-based economies. Empowerment requires farmers to act productively, creatively, and innovatively. Such empowerment is urgently needed, considering that the vast majority of farmers are prone to be caught in a poverty trap. The vulnerability of farmers to poverty is a consequence of weak human resources in the socio-economic environment. It included low levels of education, low income, lack of entrepreneurship, poor health status, limited access to technology, low credit utilization, and limited ability to adopt innovation [1]–[4]. The primary source of farmers' incomes is derived from small-scale agricultural businesses,

often based on single commodities. Farmers in developing countries have limited access to technology, additional production capital, and markets. However, farming communities still have intense social energy, especially in terms of local wisdom, collectivity, cohesion, community sentiment, local institutions, social capital, and solidarity [5]–[7]. Social energy provides effective support for the empowerment of farmers. Therefore, various empowerment programs utilize social power to ignite the spirit of farmers, encouraging them to participate actively through a group approach. Achievement of the goal of empowering farmers remains a slow process. The willingness, intentions, and actions of farmers are built collectively, but individual actions must be enabled to encourage farmers to embrace innovation [8]. Unique ability as an agent in the innovation



system encourages individuals in farming communities to be more productive, creative, and innovative.

Empowerment projects have the strategic function of increasing self-capacity and improving the quality of human resources to produce something with added value [9], [10]. The goal of empowerment is not focused solely on developing economic causes; an essential objective is the development of sociocultural behavior. Such behavior is key to individuals' self-awareness and motivation, enabling them to improve their potential as independent individuals actively.

The empowerment process should not stop at a certain point where farmers are still not fully independent. Empowerment should be achieved by following a method in a continuous cycle. Farmers who have developed a dual livelihood pattern also need to empower themselves to increase their capacity to become more self-reliant. Empowerment is a multidimensional activity with economic, social, cultural, psychological, ecological, and other aspects [11]. An empowerment process based on livelihood diversification in on-farm, off-farm, and non-farm locations cannot be separated from entrepreneurship and the adoption of technology [12].

Determinant factors in the empowerment of farmers have different strengths at various stages of the process. One of the most important factors that drive motivation is the quality of human resources [13]. The quality of human resources is a reflection of social behavior in the act of economic morality within the scope of subsistence ethics. Another important determinant is the power of individual adoption in the context of social network-based collaboration [14], [15]. Social networks can be considered to be channels for the adoption of agricultural technology. Still, the problem of innovation characteristics, in terms of the complexity, suitability, and simplicity of testing by farmers, must be considered [16]. Farmer household empowerment is also determined by the ability to develop livelihood diversification in on-farm, off-farm, and non-farm situations using commodity choices based on market trends [17].

In the dynamics of village community empowerment based on livelihood diversification, farmers often transition from an on-farm to an off-farm lifestyle [18], [19]. Farmer's work moves from on-farm to off-farm locations because farmers do not have ownership of the agricultural land to be cultivated [20]. About 75% of farmers in the world manage small-scale agricultural businesses (land area < 2 ha) and have low-income levels [21]. The scarcity of agricultural land is a result of the pressure to convert arable land for non-agricultural uses combined with extreme trends in the degradation of land fertility. The empowerment of farmers through livelihood diversification has led to a transition from an on-farm to an off-farm lifestyle. The cococraft craftsmen provide one example of a group of farmers who switched from on-farm to off-farm working conditions in the subdistrict of Purbalingga Wetan, Central Java, Indonesia. In this subdistrict, cococraft micro-businesses are managed by craftsmen, most of whom have subsistence-level socioeconomic characteristics, including conventional and straightforward business management practices [2], [22].

The incomes received by the craftsmen who own the cococraft micro-businesses are relatively small, ranging from IDR. 3,000,000 to IDR 5,800,000 per month. The income of an assistant craftsman is only IDR 1,200,000–IDR 2,500,000 per month. The assistant craftsman wage rate depends on the ability to produce cococraft products on every working day. The small incomes make it difficult for the craftsmen to increase the scale of their businesses. Their production capital is also limited, which means that the craftsmen remain at the subsistence boundary. They earn relatively small incomes due to their slow integration of empowerment actions through product diversification. Only a few craftsmen have begun to diversify their products through innovative, creative, and productive activities, namely through cococraft and cocodust production. Like cocopeat, coconut fiber, and coconut coir, cocodust is an effective alternative planting medium for various types of plants in pots or polybags [23], [24]–[27]. The only difference is the raw material; coconut peat, coconut fiber, and coconut coir are obtained from coarse-sized coconut belts. Whereas, cocodust is processed from cococraft production waste (wood and coconut shells in the forms of dust particles, flour, and fine powder). According to particle size, cococraft waste used as cocodust material is classified as fine (< 0.5 mm), medium (0.5 to < 0.3 mm), and coarse (3 to < 4 mm) [25]. Cocodust is an innovative, environmentally friendly product. By producing cocodust, the craftsmen are making a real effort to reduce the environmental pollution caused by the piles of cococraft waste that cannot be processed.

Cocodust can be used by craftsmen to grow vegetables and flowers in their backyard with viticulturally technology. Cocodust products provide various functional and economic benefits. Something that becomes an important issue turns out to be the slow progress in the empowerment of those craftsmen through the adoption of cocodust technology. Few craftsmen willingly adopt cocodust production technology. The majority of them are still reluctant to adopt. Craftsmen who are unenthusiastic to adopt usually have a subsistence and non-innovators trait. The willingness to adopt is slow after the initial stage of being conscious and interested in technology. They do not dare to continue to the stage of assessment, testing, and adoption. The problem of being reluctant and have a passive attitude of those craftsmen were influenced by their background of subsistence conditions and their difficulty of managing cococraft micro-businesses. This made the subsistence craftsmen find it challenging to increase their revenue since their products are monotonous.

The empowerment of craftsmen became stopped, and it creates difficulty in helping them from their economic problems. The determination of the research theme was based on those problems. After that, the focus of the study is the design of the empowerment mechanism for the adoption of environmentally friendly cocodust production technology by the subsistence craftsmen. The findings of this research became a solution to the problem of reluctance and passive behavior of some subsistence craftsmen in adopting cocodust production technology. The design of empowerment mechanisms can be used as reference material, comparisons and considerations to obtain the

solutions to similar problems. The technology of cocodust production is significant for resolving the issue of scarcity of agricultural arable land. This product can become a seedling media and alternative planting media for organic farm farmers in a narrow area.

## II. MATERIALS AND METHODS

The research location was Purbalingga Wetan Subdistrict, Central Java, Indonesia. Purbalingga Wetan itself is a center of cococraft production from coconut waste, specifically wood and shells. Upon receipt of orders, the craftsmen produce cococraft items from the coconut belt. The operation of cococraft micro-businesses is the main activity of the craftsmen who own these businesses. These micro-businesses absorb other workers who serve as assistant craftsmen. Cococraft craftsmen are typically school dropouts, fired employees, farmers who are incapable of securing arable land, and other unemployed residents. The Regional Government of Purbalingga Regency provides some assistance to this group of craftsmen in the form of workshops, product showrooms, work tools, and entry to market channels (e.g., exhibitions).

The research presented here was a descriptive case study conducted using a combination of qualitative and quantitative approaches, with a quantitative-dominant model [28]. A qualitative approach is appropriate for examination of the issues of subsistence conditions, causes of inaction, and the design of adoption mechanisms. The quantitative approach was applied to capture data regarding the production ability, type, shape, source, and availability of cococraft waste and its functional usefulness, together with any factors inhibiting the adoption of innovation.

The primary data for the study was a group of craftsmen, including micro-business owners and their assistant craftsmen, who worked on a daily or weekly wage system. Information was collected using a purposive sampling technique. The criteria used to determine whether individuals were included in the study are as follows:

- Subsistence craftsmen who had developed the process of adopting cocodust production technology.
- Ability to produce a finely shaped 4-mm cococraft waste product.
- Ability to use processed or unprocessed waste.

Individuals who had not adopted cocodust production technology were also considered. In total, 31 individuals were ultimately selected from the craftsmen. Another primary data source was a group of individuals classed as innovator craftsmen, who had adopted cocodust production technology to obtain functional and economic benefits. The key informant in the study was the owner of a cococraft micro-business, identified using the rolling snowball sampling technique. Those who were selected as respondents can be classified as two groups of respondents based on the working units, i.e., some craftsmen work in Manunggal Karya Workshop and craftsmen who work in their houses. Data were collected primarily through in-depth interviews, participant observation, and focus group discussions. The sources, technique of data collection, and types of data used in this study are presented in Table 1.

TABLE I  
SOURCES, TYPES, AND TECHNIQUES OF DATA COLLECTION FROM THE CRAFTSMEN OF PURBALINGGA WETAN

No	Type of Data	Data Collection Techniques		
		In-depth Interviews	Participatory Observations	FG D
1.	Subsistence condition	60	10	20
2.	Production ability	60	30	10
3.	Types, forms and sources of cococraft waste availability	70	20	10
4.	Factors causing inaction of adoption	40	20	40
5.	Functional benefits	60	30	10
6.	Economic benefits	70	10	20
7.	Inhibition power at each stage of adoption	50	25	25
8.	Adoption potency in the general characteristics of cocodust innovation	70	10	20
9.	Adoption potency in the specific characteristics of cocodust innovation	70	10	20
10.	Mechanism design for adoption technology with subsistence craftsmen	30	20	50

Data processing and analysis were quantitative and qualitative. Quantitative data were processed using simple statistics, namely the calculation of average values, percentages, and frequency distributions, as well as scoring and tabulation. The description of data analysis techniques is shown in Table 2.

TABLE II  
DATA ANALYSIS TECHNIQUE ADJUSTED BY EACH OF THE PROBLEM FORMULATION FOCUS

No.	Problem Formulation Focus	Data analysis technique
1.	Subsistence condition	<i>Interactive Model</i> [29]
2.	Production ability	Frequency distribution and histogram
3.	Types, shapes, and sources of cococraft waste availability and ratio	Percentage value and tabulation and frequency distribution
4.	Factors that cause inaction of adoption	<i>Interactive Model</i> [29] <i>Reflection Model</i> [30], [31]
5.	Functional benefits	Scoring and histogram
6.	Economic benefits	Scoring and histogram
7.	Inhibition power at each stage of adoption	Scoring and frequency distribution polygons
8.	Adoption potency of the general characteristics of cocodust innovation	Scoring and frequency distribution polygons
9.	Adoption potency of the general characteristics of cocodust innovation	Scoring and frequency distribution polygons
10.	Mechanism design for adoption technology with subsistence craftsmen	<i>Interactive Model</i> [29] <i>Model Refleksi</i> [30], [31]

### III. RESULTS AND DISCUSSION

Cococraft craftsmen are a part of the farming community who have diversified their livelihoods in recent years. Their livelihood pattern has developed into an off-farm lifestyle. Craftsmen process coconut waste into various design plans for cococraft motifs. The type of design and cococraft motifs are adjusted according to market trends [32]. Although they obtained small incomes, many respondents still maintained cococraft micro-businesses as their basic livelihood pattern. Coconut waste is a resource that can be processed into a variety of designed craft products with functional and economic value [33], [34].

The majority of respondents (> 50%) remain to live in the subsistence condition. The average income level was IDR. 2,750,000 per month. The economic burden of their family was on average of 5 people. The cost of living per individual family was an average of IDR 550,000 per month or IDR 18,333 per day. That circumstance illustrates how subsistent respondents are vulnerable to experiencing urgent economic problems. However, the minimum cost of living, especially to meet their basic family needs, is not a problem for them. A micro cococraft business is still maintained as their main source of family income. This situation is closely related to the confidence of subsistence respondents who feel safe and secure in their income since the cococraft has a market certainty.

The outflow of time for subsistence respondents and innovators to produce cococraft is, on average, 14 hours per day. The work starts at 7 am and ends at 9:00 pm. If the order peaked, the respondent worked until late at night (24.00 pm). Each respondent works every day without holidays. High time allocation for producing cococraft. The condition is under the explanation of the respondent whose initials Wd (34 years old):

*“Working to process coconut shells and coconut wood waste takes a long time. From morning to night. There are no holidays. This is done for the pursuit of time. Promises to consumers and traders must be kept. Work continues. Although the benefits are only a few.”*

The work of processing coconut waste into cococraft was carried out by some respondents in the workshops belonging to the *Manunggal Karya Group*. Others work in their own homes. Their workshops are usually combined with the kitchen, living room, or a particular room in their home yard. Respondents' lags in processing fine-form waste from cococraft production because product modification technology is still minimal. In connection with this problem, a respondent whose initials Tr (45 years old) explained several reasons for letting cococraft waste scatter around the workshop:

*“Not yet had time to process cococraft waste. Not skilled in waste treatment technology into useful products. We are too busy every day to work producing cococraft. So, there is no time to produce other products.”*

Differences among working units were found to constitute a factor determining production capability. The production ability of craftsmen and innovators working in the *Manunggal Karya* workshops was higher than that of those who worked at home. Respondents who produced

goods in workshops consistently maintained business relationships with collectors, retailers, and customers. The quantity and quality of their cococraft products were also maintained. All study participants completed the product finishing process well. They adhered to the time limit for the completion of product orders, based on the initial agreement. Respondents indicated that they would feel guilty if an order not finished in time. The quality of the cococraft products was consistent, and consumers were not disappointed. The design and cococraft motifs were adjusted to meet market demand. The ability of the craftsmen to adjust the design of the cococraft motif according to market trends, together with customer demand, supported the continuity of business relationships. The craftsmen commonly gave customers bonus pieces of cococraft as a hospitality service.

The working conditions were very different for craftsmen who produced their products at home. Product completion was often delayed. The respondents were often negligent, forgetting to prioritize the first customers when accepting other orders. They lacked warnings from fellow craftsmen to keep them on track in completing orders on time, whereas this practice was common in the *Manunggal Karya* workshops. Some respondents also paid little attention to the maintenance of product quality because they were rushing to meet order deadlines. These respondents rarely perceived the unique nature and neatness of cococraft, and they tended to hold the principle of “goods ready and goods sold.” Fig. 1 shows the production capacities of the craftsmen in the two work locations.

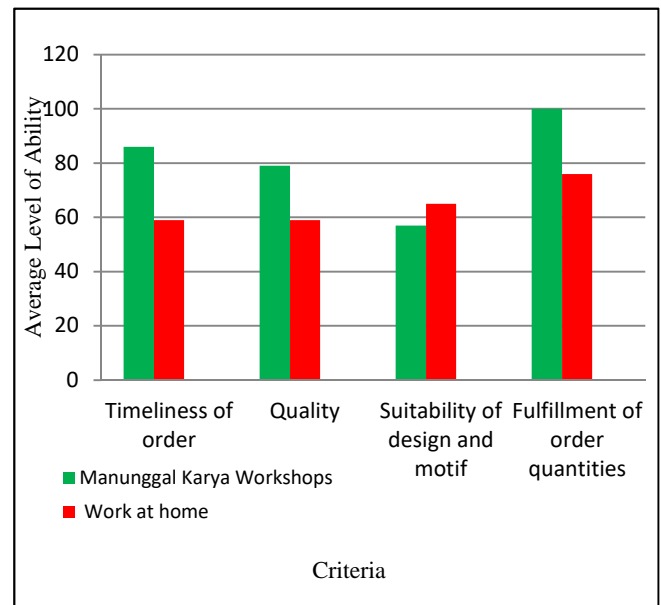


Fig. 1 Craftsmen's production capacity in two different working units

Consistent cococraft production by the subsistence craftsmen and innovators generated a constant stream of various types and forms of waste. Respondents used some types and forms of waste functionally and economically. Utilization of this waste, however, was of little value for subsistence craftsmen and innovators. The various types and forms of cococraft waste detailed in Table 3 are classified according to size, namely coarse, medium, and fine waste. Coarse cococraft waste in the form of a piece of wood and

coconut shell becomes cococraft material. Another crude waste is an unused product due to some defects, broken (bent, hollowed), unsold, and molded. The amount of crude waste (23 percent) is more than medium waste (9 percent) but less than the fine one (68 percent).

Medium-sized waste is only 9 percent in the hemisphere or fraction shape. This waste is obtained from the process of splitting and stripping coconut wood or by solving shells. The amount of medium-sized waste is the least amount of waste compared to coarse and fine size waste.

TABLE III  
VARIOUS TYPES, SHAPES, SOURCES, AND AVAILABILITY OF COCOCRAFT WASTE PRODUCED IN PURBALINGGA WETAN

Types based on size	Waste types	Waste Sources	Average Volume of Waste Per Production (Kg)	Total waste per types (Kg)	Percentage (%)
Fines	Powder	Coconut wood sanding	9	50	27
		Coconut shell sanding	7		
		Coconut sawmills	5		
		Shrinkage of coconut wood	10		
		Shrinkage of shell	15		
		Coconut wood scrape	8		
		Coconut shell scrape	6		
	Dust	Drilling of coconut wood/shell	11	58`	32
		Coconut wood sanding	14		
		Shell sanding	14		
		Coconut wood scrape	12		
		Scraping of coconut shell	7		
	Flakes/slices	Shredding of shell	9	16	9
		Coconut sawmill	7		
Medium	Fractions	Wood cleavage	5	17	9
		Stripping coconut wood	5		
		Breaking coconut shell	7		
Coarse	Pieces	Coconut sawmills	7	19	10
		Cutting of coconut shell	7		
		Cutting of coconut wood	5		
	Unused Product	Infected by mushroom Spots	6	23	13
		Not sold	4		
		Wrong design and motifs	2		
		Defective product (broken, rough, curved, perforated and incomplete product texture)	11		
Total				183	100

The finely shaped cococraft waste was initially obtained from cococraft product which made from coconut waste. Based on the size, those will be distinguished in very fine categories around  $< 0.5$  mm, while 0.5 mm to  $< 0.3$  mm is a medium size, and the coarse size is 3 mm to  $< 4$  mm [25]. The cococraft waste, which includes coarse fine material, is contained from shredded shells and sawdust of coconut wood waste. There are not many pieces or slices produced from the cococraft processing process, only 12 percent in amount.

Medium fine waste in the form of the powder obtained from the process of shredding, sanding, sawing, and erosion of coconut wood and shell. The amount of this fine waste is more than the number of pieces and slices by 40 percent. Dust and flour are a very fine-sized waste produced from the process of drilling, sanding, and erosion. Dust or flour waste (48 percent) is the most produced waste by the respondents. In Fig. 2, the categorization of cococraft waste could be observed.

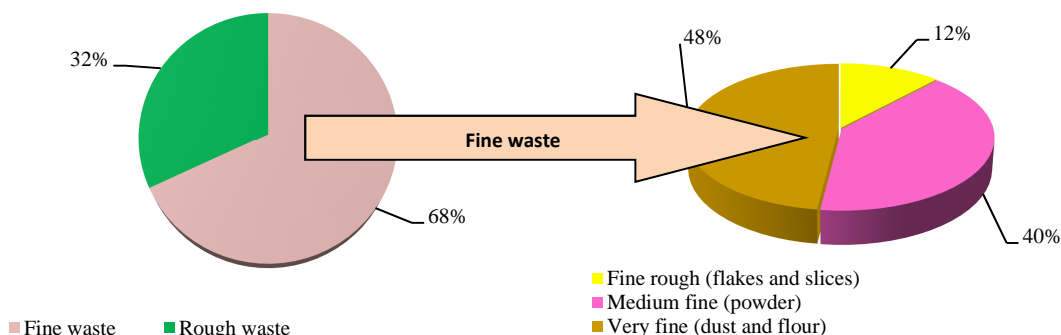


Fig. 2 Cococraft waste ratio based on the fineness of waste

Cococraft waste in the form of rough, medium, and fine-sized has minimal functional benefits. Most crude waste (68 percent) is carried by scavengers to be used as fuel for cooking stoves. Only a few respondents obtained the functional benefits of crude waste for their cooking stoves (35 percent) and charcoal (1 percent). Respondents let this crude waste to be piled up on the edge of the workshop before being collected by scavengers. Craftsmen with assistance status also utilize some crude waste that can still be processed for small and mini-sized cococraft materials such as brooches, shirt buttons, key chains, badges, or accessories. The value of the functional benefits of crude waste for respondents is low because it is only in level 3. However, the amount of crude waste that becomes waste in the workshops is only a small amount of percentage, which is 2 percent.

There is a variety of functional benefits of medium-sized cococraft waste. Respondents used it to cover waste bins, taken by scavengers, as a mixture of planting media and organic fertilizer or as a fuel for cooking stoves. Scavengers

sell medium-sized waste to coconut sugar craftsmen for cooking briquettes. Most of this waste (52 percent) is left stacked or scattered on the edge of a small river at the back of the workshop. If this allowed to continue, especially during the rainy season, the piles and scattered waste become pollutants that pollute and cause a foul odor. The method taken by respondents to avoid the problem of this pile of medium-sized waste is by burning it during their leisure time. The level of functional benefits of waste is reaching level 5. Only a few respondents are utilizing moderate waste functionally; their innovative trait characterizes those respondents. Some farmers routinely come to cococraft workshops to take medium-sized waste to be used as a mixture of organic fertilizer. Some respondents also began to process this medium size waste into seedling media and alternative growing media for planting vegetables and flowers. Seedling media products and alternative organic media made from waste are being called cocodust. The range of functional benefits is detailed in Fig. 3.

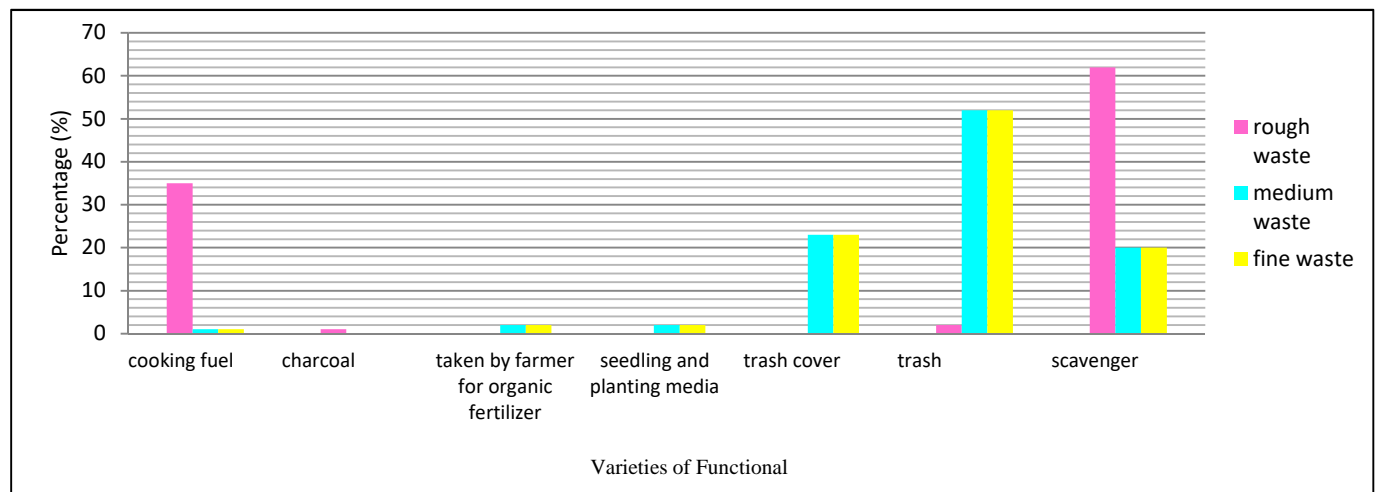


Fig. 3 Varieties of functional use of cococraft waste

The practical use of fine cococraft waste is not having many differences with the medium size one. Most (52 percent) fine waste is still in the form of fibrous garbage that is piled around the workshop environment. At a specific time, the piles of refined waste are also burned by respondents to reduce the risk of pollution. The processed waste is also used to cover waste bins. Some scavengers take some fine waste to sell to coconut sugar craftsmen. Waste used by craftsmen becomes briquette material when they cook coconut sugar. Some respondents, who were categorized as innovators, proceeded the fine waste into seedling media and planting media for vegetable flower. Some farmers also diligently take this fine waste to mix paddy organic fertilizer in their fields. Cococraft waste has minimal economic benefit. The respondent's actions to provide this raw, medium, and fine waste are free of charge for scavengers, and farmers comprise the factors that cause it low economic benefits. There are not many respondents who sell medium and fine-sized waste without processing it first. Respondents also sell this waste to street food traders who cook using charcoal, made from pieces of coconut wood or shell.

Other buyers are farmers who use waste to mix their organic fertilizer. The price of crude waste is relatively low, which is IDR. 1500 per plastic bag. The cost of medium and fine-sized waste is the same as IDR 1,000 per plastic bag. Respondents sell crude waste, on average, four plastic bags per transaction. So, the economic benefits of cococraft waste received by respondents in unprocessed conditions averaged around IDR 10,000 per transaction. Transactions take place twice in one week.

The less economic benefits of cococraft waste resulted in the majority (64 percent) of respondents choosing to leave waste piled into the garbage or taken freely by scavengers. Few (6 percent) of respondents sell medium and fine-sized cococraft waste in the form of processed products. The products sold are in the form of charcoal from coarse waste and cocodust (seedling media and planting media). Cocodust is sold for IDR. 10,000 per pack containing 5 kilograms of fine-sized waste. Cocodust consumers come from among housewives who want to grow vegetables and flowers organically in the yard of their house with the narrow land condition. Cocodust sells an average of 20 packs per week. Respondents receive additional income from the sale of



cocodust IDR 200,000 per week. The additional amount of income from cocodust is 100 percent higher than selling some unprocessed waste. It's just that the number of respondents who sell waste in the form of processed cocodust is so small.

The willingness of innovator craftsmen to diversify their products certainly strengthens survival resilience because it increases the source of their income [35], That is why product diversification is an effort to increase their income [36]. Diversification requires perseverance and willingness supported by qualifications, skills, and suitability of innovation. Fig. 4 shows the economic benefits of cococraft waste.

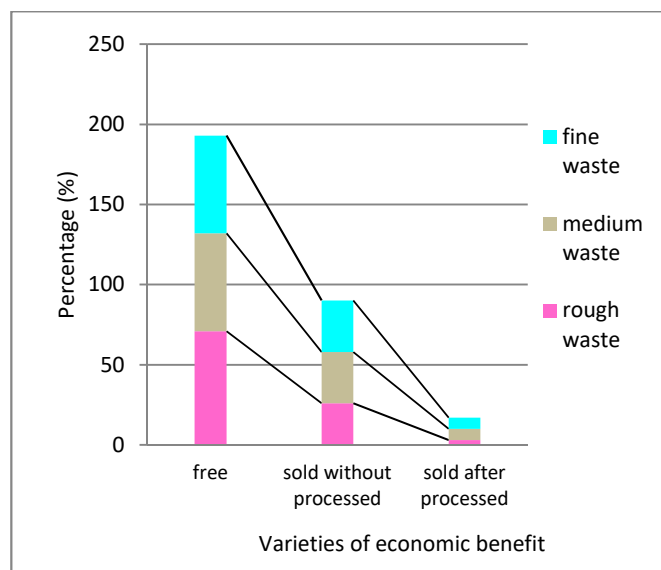


Fig. 4 Varieties of economic benefit generated from cococraft waste

Although cocodust has a higher economic value, the majority (93 percent) of respondents have not been interested in producing this alternative seedling or planting media. Some reasons behind this problem are related to social, economic, and technological factors. The social factor causing the respondents not to start managing the cococraft production business was the collectivity of fellow craftsmen who focused on the micro-business of cococraft production.

Respondents had some difficulties in managing time because they felt they were responsible for completing the order. That sort of behavior creates the diffusion process of cococraft production technology that has not spread to the respondents evenly. Information on cocodust technology that was received by subsistence respondents from innovator craftsmen was still not that intensive, which makes it difficult to generate motivation. The benefits of this technology have not been able to convince respondents to act both for their own functional and economic interests. Meanwhile, the relationship between innovators and subsistence respondents had some social stiffness during the process of transferring knowledge in adopting cocodust production technology.

Cococraft production technology was a sealed innovation for the majority of the subsistence craftsmen. Key innovators adopted the production technology for seedling and planting media after several rounds of experimentation. They experimented by using the products to grow vegetables and

flowers in a viticulture planting system. After proving the usefulness of a functional cocodust product, innovators began to produce the product repeatedly and marketed it to housewives and farmers with small farming yards on their properties. Another social factor that resulted in production delays among subsistence craftsmen was their weak entrepreneurial ability. Subsistence craftsmen were reluctant to take risks and feared income loss. The majority of subsistence craftsmen also did not take advantage of the economic opportunities offered by the processing of cococraft waste into cocodust.

Several economic factors that prevented subsistence craftsmen from diversifying their products by processing cococraft waste into cocodust were identified. Several costs are involved in the procurement of the fermented materials (EM 4 and molasses) required as nutrient sources in cocodust production, which comprised one of the main inhibitory economic factors. The other costs burden the subsistence craftsmen were the purchase of plastic tarps, plastic sacks, soaking buckets, stirring shovels, polybags, and plastic packaging. Waste as a nutrient source could be obtained for free, e.g., waste cabbage from the vegetable traders in the local market. Goat manure could be obtained from farmers in the area. The problems were explained by respondent whose initials Tn (49 years old), he stated that:

*"It is still hesitant to produce cocodust straightforwardly. Profit is still minimal, whereas the capital to make cocodust is needed. Meanwhile, the farmers here are often asking for free. The price is cheap. Though making cocodust is quite complex. Must go through the fermentation process first for sources of nutrients."*

Respondents showed an unwillingness to bear the costs of cocodust production due to their subsistence-level economic conditions. The incomes of subsistence craftsmen fulfill only their basic daily needs, with no surplus. Subsistence respondents thus had difficulty allocating any of their incomes to purchase additional cocodust production materials and tools. The business capital of each subsistence craftsman was limited to around IDR. 500.000–1,700,000. Another inhibiting economic factor was reflected in respondents' doubts about the certainty of prices and cocodust market conditions. Respondents still wanted to confirm the sustainability of cocodust micro-businesses by observing innovators. Technological factors also contributed to subsistence craftsmen's reluctance to produce cocodust.

Cocodust is processed using cococraft waste material classified as fine, medium smooth, and very smooth. This waste material is mixed with nutrient sources from compost (cabbage waste) and goat manure. Both cocodust nutrient sources are first fermented with a solvent produced from EM 4 and molasses. In addition to changes in the type of technology used to create cocodust, the process can be improved by product modification and material substitution. Before being mixed together, the cococraft waste is first soaked for 2–3 hours with flowing water to remove tannins, which are known to interfere with plant growth. After soaking, new cococraft waste is fermented with EM 4 solvent, molasses, and water for 3–5 days. The fermented cococraft waste is mixed with the other fermented nutrient source material at a ratio of 60:20:20. The series of stages

required for cococraft production was confusing for many subsistence craftsmen. Only innovators adopted new cocodust production technology. Respondent whose initials Wd (46 years) explained several reasons for the ability to process cococraft waste as follows:

*"I have started trying to process cococraft waste. The resulting product is growing media for vegetables. I am interested in that. Many benefits to reduce cococraft waste in the form of a fine. Even better, it is useful for an organic farm in a narrow area. We can grow vegetables using only cocodust growing media from cococraft waste."*

Subsistence craftsmen indicated that cococraft production technology was complex and challenging to understand.

They were aware of the functional and economic benefits of cocodust, but their interest in cocodust innovation was minimal. They did not assess the usefulness of cocodust production, and none of them attempted it, even on a small scale. As a consequence, most subsistence craftsmen did not adopt cocodust production technology. The primary factor causing the slow adoption of new technology by subsistence craftsmen was their limited understanding of the technology; economic and social factors had lesser impacts. The statement of respondents during the interview had illustrated the inhibiting power of those three factors. Fig. 5 shows the extent to which the three inhabitants which affecting the process of adoption of new technology by subsistence craftsmen at each stage.

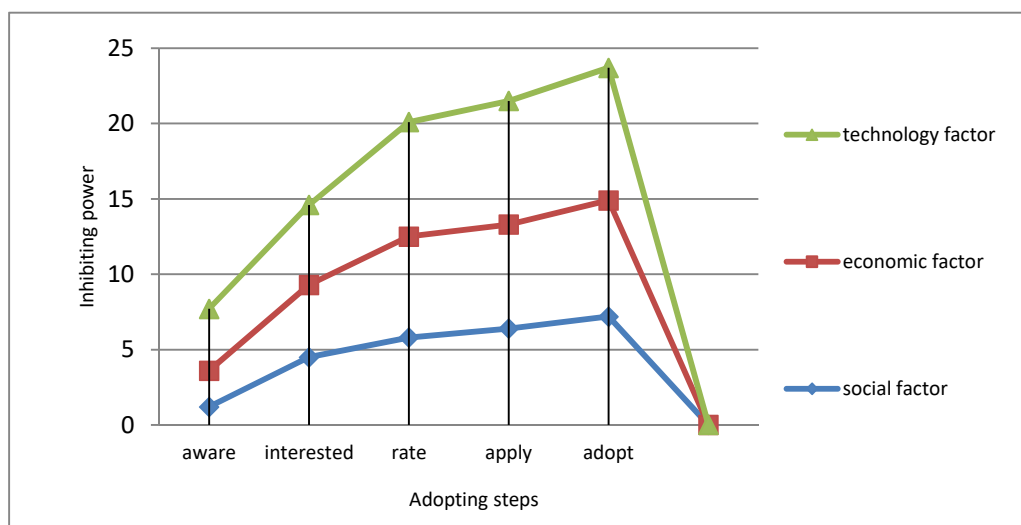


Fig. 5 The inhibiting power of three-factor affecting the adoption process of cocodust technology

The technology of cocodust production is indeed a challenge for the development of product diversification that can increase the income of respondents. Cocodust itself has several characteristics that determine the smooth adoption in both categories of respondents. Characteristics of innovation that determine the power of approval with subsistence respondents and innovators are not only referring to those proposed by [37] and [38]. However, other characteristics also determine and act as a facilitator.

The leading dominant characteristic motivating innovators to apply cocodust production technology is from relative advantage and trialability. Awareness of the usefulness of cocodust innovation encourages the interest and willingness of innovators to try to produce limited quantities of cocodust immediately. Other driving characteristics are observability and compatibility. The existence of cocodust is suitable for the needs of innovators who want to utilize some fine-shaped cococraft waste for economical product materials. Cocodust is also feasible for solving waste problems that accumulate and potentially pollute the environment around workshops. The stages of cocodust production are easily understood and observed so that innovators believed to

process it without constraints. Explanation from a respondent, Jn (53 years) stated that:

*"Cocodust production technology has many benefits. I was interested in producing cocodust, not just because of economic factors. However, I am more motivated because of environmental factors. Cococraft waste can be reduced because it is the cocodust raw material."*

Complexity characteristics are considered natural by innovators because they are deemed to be insurmountable. Unlike the other subsistence respondents who were reluctant to adopt cocodust innovation because they were worried about the complex process. From the beginning, the subsistence respondents were anxious about the complexity and difficulty of adopting cocodust innovation. While subsistence respondents are aware that cocodust innovation has functional and economic benefits for them. However, they do not dare to try. Subsistence respondents are too passionate about making cococraft products, so they are not sure of the suitability of the cocodust with their work experience. In Fig. 6, the details of the relationships between the main characteristic and the power of adoption by two categories of respondents.

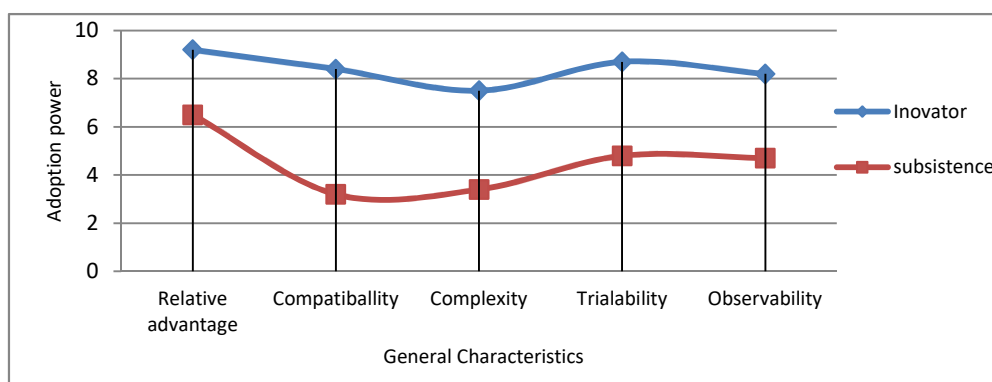


Fig. 6 Power of adoption with the main characteristics of cocodust innovation

The willingness of innovators to produce cocodust has a vital function in that it can reduce the effect of cococraft waste as an environmental pollutant. The technology used in cocodust production is environmentally friendly. Innovators also know the potential economic value of cocodust products as sources of additional income. These two characteristics provide innovators with a sense of belonging. The novelty and accessibility aspects are also significant drivers of innovation through cocodust production. As a new product, cocodust has social benefits for these innovators and wider

benefits for humankind. Innovators sometimes also gave cocodust to farmers for free to use as a seedling and planting media. This socially motivated action will promote the use of cocodust to a much wider audience. Innovators considered production costs to be low and thus not an obstacle to adoption. Fig. 7 shows the relationships between characteristics of the facilitators of the new technology and the adoption of new technology by innovators and subsistence craftsmen.

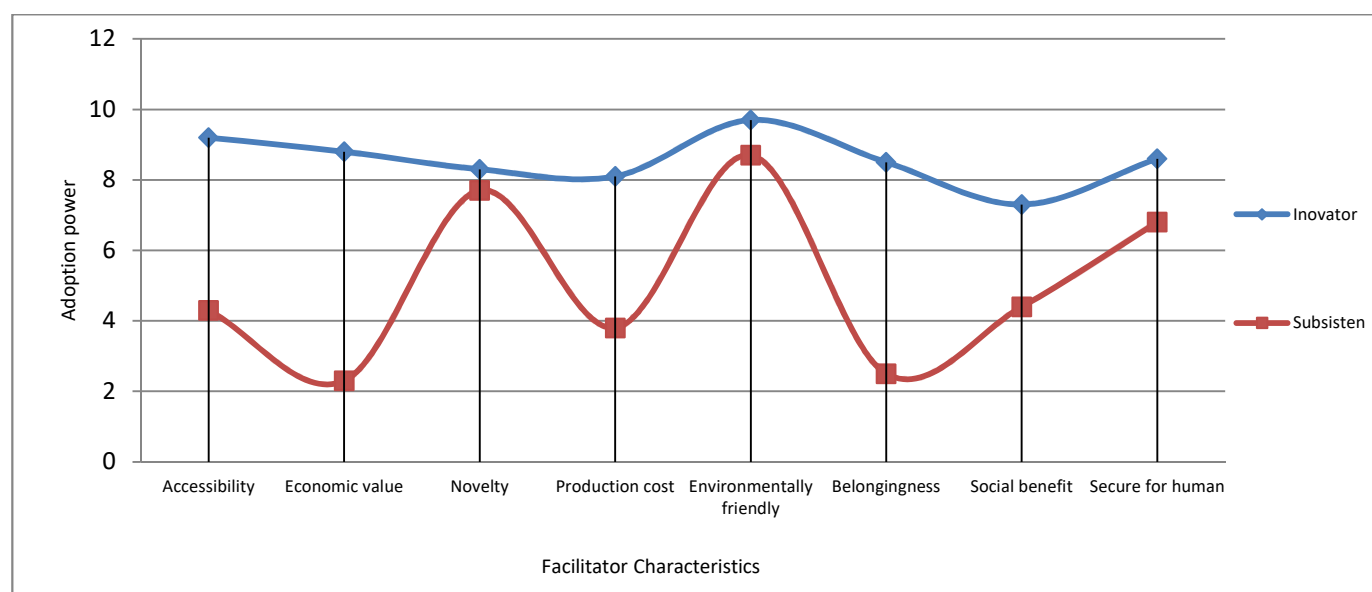


Fig. 7 The adoption potency with the characteristics of the facilitator of cocodust innovation

Subsistence respondents realized that cocodust production technology was environmentally friendly and had novelty value, but they were unwilling or unable to pay the production costs. Their limited production capital resulted in an aversion to the allocation of funds for cocodust production. They expressed doubts regarding insecurity about the social benefits of cocodust innovation. These doubts were difficult to suppress because the economic value of innovation had not been proven to subsistence craftsmen in real terms.

The problem of a lag time in technology adoption among on-farm farmers and off-farm craftsmen with subsistence characteristics has also been reported in an agrarian area in

Tunisia [39]. Several factors, such as their agricultural education, farm size, and livestock, could lead to additional income for off-farm craftsmen, which aided their smooth adoption of innovative technology. Other factors facilitating technology adoption are an adequate supply of capital, intense counseling, ability spirit entrepreneurial, and the availability of production inputs [40]–[42]. Among subsistence craftsmen, the main characteristic of cocodust itself were not the only factors influencing technology adoption; the characteristics of facilitators were also important factors.

A flexible and conducive management mechanism is required to improve technology adoption among subsistence





Another element that needs to be considered regarding the management of technology adoption by subsistence craftsman is the availability of production capital and raw materials, together with production inputs that are easy and cheap to obtain. The intensity of counseling and collaboration are also essential elements that should not be ignored by subsistence craftsmen. Fig. 8 shows the design of the empowerment scheme for the adoption of cocodust technology that would enable product diversification and allow subsistence craftsmen to create innovative products.

#### IV. CONCLUSION

The adoption of innovative cocodust production technology utilizing cococraft waste has the potential to empower subsistence craftsmen. Their reluctance to adopt this technology is not due solely to their subsistence characteristics. The dominant inhibitory factors are technological, economic, and social. Some facilitator characteristics also prevent subsistence craftsmen from adopting innovative cocodust production technology. Some of the key characteristics that prevent adoption include compatibility, complexity, observability, and trialability. Other facilitator characteristics that must be considered are the economic value, sense of belonging, production costs, accessibility, and social benefits.

The research output in the form of management design on the adoption of environmentally friendly cocodust production technology is a solution to the problem of reluctance behavior that has been experienced by subsistence craftsmen. Design management is constructed from several essential elements that are complementary and binding. The basic elements are focused on the clarity of functional and economic benefits. Another basic element of the design is the availability of capital and production facilities that are held collectively to save production costs. The supporting element which became the core of management adoption design lies in the behavior at each stage of adoption. Sympathetic management of primary and facilitator characteristics are part of the supporting element in the adoption of management design. Behavior adoption is improved by managing counseling activities, networks of collaboration, sharing experiences, and continuous advocacy. Continuous productivity has some functions to reduce cococraft waste. Market security and price level are some of the supporting elements for increasing income that supports empowerment. Management of potential cocodust production by technology adoption could also be a solution to the problem of scarcity in agricultural land. The cocodust products are produced effectively as a seedling and planting media in the organic farms, which is developed on a narrow land.

While the adoption management scheme is a fundamental and theoretical attribute, therefore, direct application to subsistence craftsmen requires studies combined with action research using some experimental methods. A solid network of collaboration and collectivity ties is needed to strengthen the awareness and willingness of subsistence craftsmen to change. The real proof of the functional and economic benefits of the cocodust innovation is needed to increase their desire to adopt cocodust production technology.

#### ACKNOWLEDGMENTS

The researchers express gratitude to the Director at the Directorate of Research and Community Service, Directorate General of Research and Development Reinforcement, Kemenristek Dikti RI, for the trust given to the research team to conduct research-based knowledge transfer activities through the Science Program for the Community. The research implementation ran smoothly over the belief that given to the researcher team through a grant of basic research scheme.

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