Analysis of Patentability on Research Results of Lecturers at Universitas Negeri Surabaya and Implementation of Patent Drafting: A Case Study

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ABSTRACT

The main purpose of this research is to find out the patenability of the research results of Unesa lecturers through PNBP funding for the fiscal year of 2022 and to find out the number of patents after the patent drafting activity. The research methods and stages included documentation analysis, implementation of patent drafting activities, and questionnaire analysis for before and after patent drafting activities. The results of the documentation analysis showed that there were 63 out of 806 lecturers' research titles with potential patents (7.8%). Then, the patent drafting activity was carried out well by inviting 5 highly competent persons in the fields of IT, mechanics and machinery, electrical engineering, science, and arts and humanities. The results of the questionnaire analysis before the activity stated that from 46 respondents: 1) 87% of respondents stated that the output of their researches was believed to be patentable and the rest are not, 2) 67.4% of respondents had produced patents for their researches and the rest were not patents, and 3) 63% respondents have never compiled a patent and the rest have. Although, all of respondents (100%) knew that the patent is very useful. After the activity, there were 29 respondents who filled out the questionnaire. They stated that all presenters were declared good and very good in terms of all aspects of the assessment. Furthermore, all respondents gave an assessment between good and very good (> 90%) for the activities covering all aspects. This means that the activity was declared successful. Also, it is certain that the number of patents that have been successfully assisted have been registered with the DJKI system, although not all of them. The end of the drafting activity has resulted in 13 patents, of which 8 patents have been registered with the DJKI system.

Keywords: Drafting Patent, Research Results, Patentability, Potential

1. INTRODUCTION

Unesa lecturers and students, especially those with social and natural sciences backgrounds (chemistry, biology, and physics) belonging to be vocational engineering (mechanics, electrics, informatics, and others) produce probably a applicable research [1], namely in the form of certain ways of working either products or processes. Therefore, the results of their research have a high chance of producing new things, which have never existed yet or improvements of existing technologies. The activity of producing something new is certainly not an easy. It takes a strong and good scientific background and hard work to produce new technology.

For this reason, it is appropriate for researchers to be given awards or legal protection. Moreover, if the technology is a new thing and has a high economic value. It was reported that there was a total of 806 research titles for Unesa lecturers funded through Unesa PNBP (non-tax revenue) funding for Fiscal Year (FY) of 2022. Those titles came from 476 research titles from various schemes of the faculty policy and 300 research titles from various research schemes outside the faculty policy, such as Unesa strategic policy, basic research scheme for domestic and foreign studies, collaborative competitive research scheme, and so on. From the 806 titles above, further documentation analysis is carried out on the titles that have potentially patents.

The basis for determining the titles with potential patents are: a) in the form of exact research, can be useful, and have an element of novelty [2][3], b) research products should be applicable [4], and c) contain inventive steps [5]. The problems are: 1) how many research results from Unesa lecturers with PNBP funding for FY of 2022 have the potential to be patented? 2) what are the obstacles for researchers in obtaining patent from research outputs conducted by Unesa lecturers? and 3) How are the results of the patent drafting activity able to increase the acquisition of patents from the research results of Unesa lecturers?

The aims of this research are: 1) to know the patentability of the research results of Unesa lecturers who receive PNBP funding for FY of 2022 and 2) to find out the increase in patent acquisition from the research results of Unesa lecturers after the patent drafting activity. This activity has been carried out by several universities in Indonesia [6][7][8] in order to train them to prepare good and correct patent drafts.

3. METHODOLOGY

The research was conducted at LPPM Unesa Surabaya within a period of six (6) months effective starting from June to December 2022.

Types of research

The type of research carried out is descriptive qualitative in the form of mapping data from research titles conducted Unesa lecturers with PNBP funding for FY of 2022 that has the potential to be patented. After that, a patent drafting workshop was performed to obtain patents that are ready to be submitted for registration through DJKI system in 2022. Analysis of data related to patent acquisition using the basis for determining titles with potential patents that has also been prepared will also be carried out in a qualitative descriptive manner.

Procedures

a. Documentation Analysis: Mapping Potential Patent of Research Results of Unesa Lecturers through PNBP Fund for FY of 2022.
   1) Obtain data for research titles from Unesa PNBP fund lecturers who passed the selection and were funded in FY of 2022 from Center for the Research and Strengthening Innovation (RPI) of LPPM Unesa.
   2) Mapping research titles from Unesa lecturers funded in FA of 2022 that have the potential to be patented on the basis of the above determination and followed by the distribution of questionnaires before the patent drafting workshop.

b. Preparation and Implementation of Patent Drafting Workshop

   1) Coordinate with the Chair/Secretary of LPPM related to the patent drafting workshop plan,
   2) Prepare and send a letter of request for resource persons for assistance in drafting patents to the Association of Indonesian Intellectual Property Centers (ASKII),
   3) Prepare materials, invitation concept, schedule, and place in order to facilitate the implementation of patent drafting and coordinate with ASKII and/or with the Chair/Secretary of LPPM,
   4) Do checking and perfecting the materials and concepts of the invitation letter for the implementation of the patent drafting workshop to the participants,
   5) Organize patent drafting activities at LPPM with the IPR adhoc team,
   6) Check patent drafting results and perfect patent drafting results
   7) Complete the results of patent drafting and submit (reports) to the Chairman/Secretary of LPPM,
   8) Compile a report on the results of the patent drafting and submit it to the Chairman/Secretary of LPPM through the Center of IPR LPPM,
   9) Prepare all patent drafting documents and their files for further application for patent registration to the DJKI [9] system to obtain an application number of patent registration, and
   10) Deliver application number of the patent registration to inventors.

The data collection instruments used in this study include: 1) a check list for determining the research titles of Unesa lecturers in FY of 2022 that have potential patents, 2) a questionnaire using the google form platform to collect all information related to the research profiles of Unesa lecturers in FY of 2022 and readiness for workshops of patent

drafting, and 3) a questionnaire using the google form platform to evaluate the implementation of the workshop adopted and adapted from the Ministry of Education, Culture, Research and Technology [10].

4. RESULT AND DISCUSSION

A. Documentation Analysis: Mapping of Potential Patent Research Results from Unesa PNBP Fund for FY of 2022

1. Find out data for research titles from Unesa lecturers who passed the selection and were funded in FY of 2022 from the Center for Research and Innovation Strengthening (RPI) of LPPM Unesa.
   Sources of information related to research titles for Unesa lecturers funded for FY of 2022 were obtained from https://lppm.unesa.ac.id/penelitian-pnbp-2022/ and can be downloaded with the permission of the Head of LPPM through the Head of RPI Center. There are two files that can be downloaded through the website which are in accordance with their respective aims and objectives, namely: 1) Notification Letter for Research and Community Service Proposals funded from Faculty PNBP funds for FY of 2022 and 2) Notification Letters for Research Proposals and Community Service Proposals funded from LPPM PNBP funds for FY of 2022. From these 2 files, it can be disclosed about the type of research, namely research on faculty policies and various names of research schemes and the number of research titles. In the first Letter, it was reported that there was a total of 476 research titles from various faculty policies with details as shown in Table 1.

   Table 1. Number of Research Titles for Various Faculty Policy by PNBP Funded for FY 2022

No	Faculty	The Number of Research Titles
1.	Faculty of Education Science (FIP)	75
2.	Faculty of Language and Art (FBS)	62
3.	Faculty of Mathematics and Natural Sciences (FMIPA)	39
4.	Faculty of Social Sciences and Law (FISH)	67
5.	Faculty of Engineering (FT)	59
6.	Faculty of Economics and Business (FEB)	46
7.	Faculty of Sport Sciences (FIO)	38
8.	Post Graduate (PASCASARJANA)	53
9.	Program of Vocation (VOKASI)	30
10.	Learning and Professional Development Institutions (LP3)	7
	Total	**476**

Meanwhile, in the second Letter regarding the research schemes, there are a total of 330 research titles with details as shown in Table 2 below.

Table 2. Various Research Schemes of Unesa PNBP Funds for FY of 2022

No	Research Scheme	The Number of Research Titles
1.	Research of Unesa Strategy Policy	16
2.	Basic Research LPPM	102

No	Research Scheme	The Number of Research Titles
3.	Basic Research for Domestic Study LPPM	126
4.	Basic Research for Abroad Study LPPM	10
5.	Basic Research for Professor Acceleration LPPM	23
6.	Collaborative Competitive Research	10
7.	Competitive Research for Innovation Product Development	5
8.	Competitive Research for Center of Excellence in Science and Technology	3
9.	Competitive Research for Educational Personnel	32
10.	Self-funded Research	3
	Total	**330**

Thus, the total number of research titles for Unesa PNBP funds for FY of 2022 is 806 titles from 476 and 330 titles.

2. Mapping research titles for Unesa PNBP funds for FY of 2022 that have the potential to be patented on the basis of the above determination and followed by the distribution of questionnaires prior to the patent drafting workshop.

From the 806 titles above, further mapping is carried out on research titles that have the potential to be patented. Based on the existing determination, finally out of the 806 research titles it was found and it was decided that there were 63 titles with potential patents and were included in the workshop.

In order to obtain certainty related to research titles for Unesa PNBP funds for FY of 2022 that are ready to be included in the workshop, a questionnaire is needed to capture the readiness of participants by preparing a googleform platform with the title "WORKSHOP DRAFTING PATEN 2022" (https://bit.ly/AngketPotensiPaten.). The point is to find out the readiness of the researchers (participants) regarding the workshop as well as the suitability of the research topic and the patent field. This is done for the smooth implementation of the patent drafting later, so that it is effective and on target.

Questionnaires are given or distributed to several participants through WhatsApp groups at least 1 week before the workshop is held. The result is 46 respondents who have filled out the questionnaire on the link with the deadline for filling out 1 day before the workshop. The results of the analysis of the contents of the questionnaire can be reported as follows.

a. The following are research areas for lecturers and/or students with potential patents. The majority of respondents' research fields with potential patents are 45.7% in science (Chemistry, Biology and Physics) and 37.0% in social humanities, as shown in Figure 1.

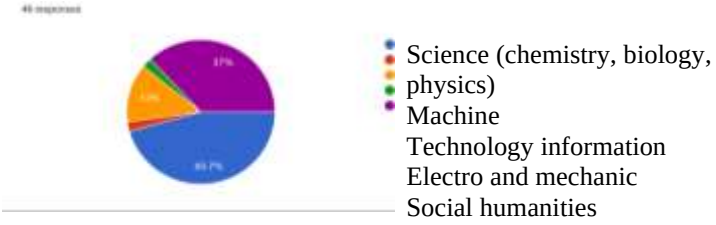


Figure 1. Research areas of lecturers and/or students with potential patents

b. Output of research results from lecturers and/or students have the potential to be patented. It is known that 87.0% of respondents believe that their research results have the potential to be patented and the rest are not sure, as shown in Figure 2.

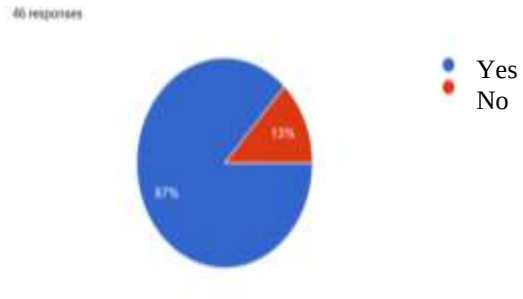


Figure 2. Outputs of research results from lecturers and/or students with potential patents

c. The research output of lecturers and/or students has been in the form of a patent. A total of 32.6% of respondents answered that their research output was in the form of a patent and the rest (67.4%) had never produced a patent, as shown in Figure 3.

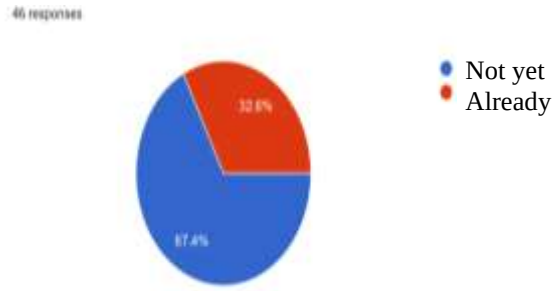


Figure 3. The research output of lecturers and/or students has been in the form of patents

d. Compile a patent description and register it with the Center for IPR, LPPM Unesa. The results of the questionnaire reported that 60% of respondents had compiled a patent description and registered it through the Center for IPR, LPPM Unesa Surabaya and the rest had never, as shown in Figure 4.

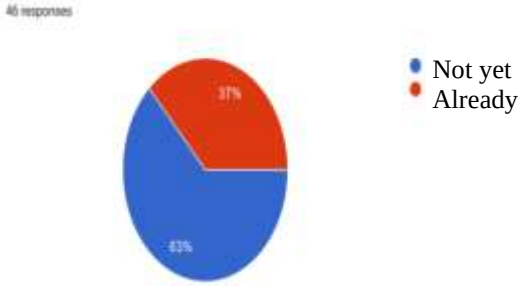
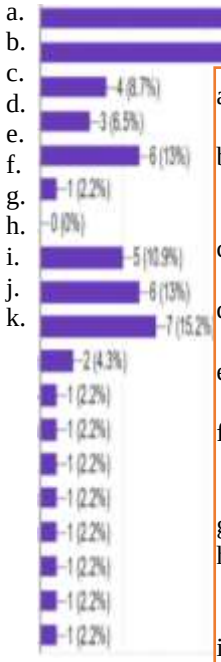


Figure 4. Compiling a patent description and registering it with the Center for IPR, LPPM Unesa

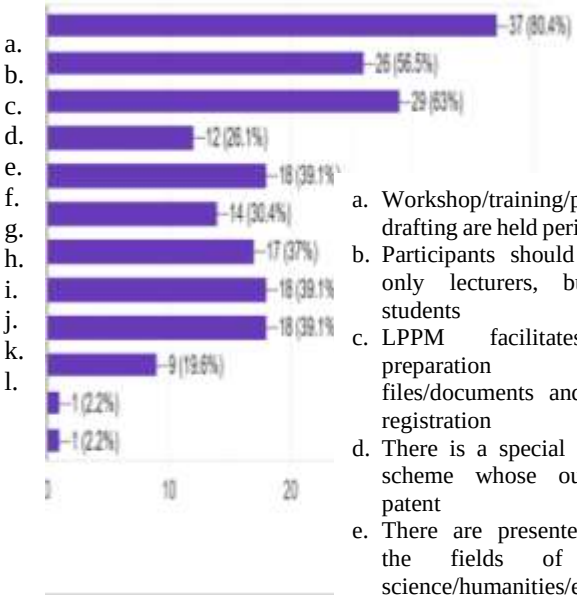
e. Reasons for respondents who do not have a patent.It was reported that the reasons of respondents did not have research outputs in the form of patents were: 1) respondents did not know how to compile or arrange a patent description (22 people or 47.8%) and 2) did not understand how to compile and manage files accompanying the patent (23 people or 50.0 %). The rest are respondents under 10 people (< 16%) who feel that the patent processing/registration fee is too expensive, even though for this case the respondents are free of charge (free) and paid by the institution if they transfer their IPR to the institution, there is no time or opportunity to compose a patent description, research is still in its early stages so that there are no new innovations that can be patented, and process of patent registration takes a long time. For more details, it can be seen in Figure 5 below. In fact, respondents (100%) consciously, know and believe that the patent is very useful. This is in line with the results of Herjanto's research (2010)[10] which reports that respondents are generally familiar with patents, but the technical understanding of the term of patent protection and the criteria for inventions that can obtain patents is still relatively lacking.



a. Don't know how to compose a patent description
b. Do not understand how to compile and manage patent files/documents
c. The research results are not worthy of being patented
d. No new results/innovations obtained
e. Patent registration fees are too expensive
f. It's lazy if participants have to take care of patent registration themselves
g. I don't think patents matter
h. There is no time or opportunity to compose a patent description yet
i. Research is still in its early stages so there are no new innovations that can be patented
j. process of patent registration takes a long time
k. Ever been

Figure 5. Reasons for respondents who do not have a patent

f. Suggestions for LPPM in the context of increasing patent acquisition from the research results of Unesa lecturers. Suggestions obtained for LPPM in order to increase patent acquisition from the research results of Unesa lecturers can be explained as follows: 1) workshops/trainings/patent drafting should be held periodically (27 respondents; 77.1%), 2) participants should not be only lecturers, but also students (19 respondents; 54.3%), 3) LPPM should facilitate the preparation of patent files/documents and its registration (22 respondents; 62.9%), 4) there is a special research scheme whose output is patent (9 respondents; 25.7%), 5) there are presenters from the fields of social science/humanities/economics who have received patent certificates (12 respondents; 34,3%), 6) LPPM needs to make circulars/brochures/leaflets of patent drafting activities (8 respondents; 22,9 %), 7) provided funds managed by LPPM for patent management and registration (10 respondents; 28.6%), 8) provided awards/gifts that received patents (registered or granted/certified) (12 respondents; 34.3%), 9) there are several examples of patent descriptions that have potential patents (12 respondents; 34.3%), 10) Center for IPR, LPPM should be more proactive (6 respondents; 17.1%), and only 2 respondents who asked for the mediation process for his patent descriptions. Furthermore, it can be studied as shown in Figure 6.



a. Workshop/training/patent drafting are held periodically
b. Participants should be not only lecturers, but also students
c. LPPM facilitates the preparation of files/documents and patent registration
d. There is a special research scheme whose output is patent
e. There are presenters from the fields of social science/humanities/economics who have received a patent certificate
f. LPPM needs to make circulars/brochures/leaflets for patent drafting activities
g. Provided funds managed by LPPM for the management and registration of patents
h. Provided awards/gifts that get a patent (registered or granted/certified)
i. There are several examples of patent description which have potential patents
j. Center for IPR, LPPM is more proactive
k. Asked for the mediation process for his patent descriptions
l. Procurement of the proposed patent draft is carried out by each faculty

Figure 6. Suggestions for LPPM in order to increase patent acquisition from the research results of Unesa lecturers

B. Preparation and Implementation of Patent Drafting Workshop

1. Coordinating with the Chair/Secretary of LPPM related to the patent drafting workshop plan.

Coordination with the Chair/Secretary of LPPM regarding the preparation of the workshop has been carried out since June 2022. The topics discussed in the coordination include: a) the date of the workshop, the names of the presenters from the Directorate General of Intellectual Property, Ministry of Law and Human Rights, Republic of Indonesia, the implementation of patent drafting workshop (online), preparation of the rundown of the workshop, the names of the PIC teams of IPR involved, and including the budget prepared for the workshop.

2. Preparing and sending a letter of application for presenters for assistance in drafting patents to DJKI Jakarta.

After it was agreed, finally, on July 12, 2022, an application letter regarding the application for online patent drafting was sent to the Director of Patents, Layout Designs of Integrated Circuits, and Trade Secrets, the Directorate General of Intellectual Property, Ministry of Law and Human Rights (called DJKI), Republic of Indonesia where the letter was written in the second week of August 2022, it is hoped that the patent drafting workshop can be carried out by asking 5 presenters with expertise in the fields of science (chemistry, physics, and biology); informatics; sosial and humanity; machinery; and electrics. However, after waiting until the deadline (second week of August 2022), another option was carried out, namely to seek and invite presenters from non-DJKI, namely the Association of Indonesian Intellectual Property Centers (called ASKII). The coordination with public relations officer (Sie Humas) of ASKII regarding to the preparation of the patent drafting workshop had been conducted well.

3. Preparing materials, draft invitations, schedules, and places in order to facilitate the implementation of the workshop and coordinate with Sie Humas ASKII.

The results of coordination with Sie Humas ASKII, finally got 5 presenters, namely: 1) presenter 1 (Information Technology), 2) presenter 2 (mechanics and machinery), 3) presenter 3 (electronics), 4) presenter 4 (science), and 5) presenter 5 (Art and Humanities).

4. Checking and perfecting the materials and concepts of the invitation letter for the implementation of the workshop to the participants.

Materials and concepts for the invitation letter for the implementation of the workshop to the participants have been prepared and at the same time a letter of application from the presenters to each institution where they work. In this case, a whatsapp group was also created to facilitate coordination and information related to the workshop.

5. Preparing the committee for the workshop at LPPM with the ad hoc team of Center for IPR, LPPM.

The establishment of a committee for the implementation of the workshop has been carried out with the ad hoc team of Center for IPR, LPPM by preparing a Letter of Assignment along with the Event Rundown.

6. Providing online assistance (break out room) to revise the participant's patent draft.

The workshop activity has been carried out by starting with the delivery of material by the two main speakers online in the plenary session. Next, mentoring sessions are carried out in groups of 5 groups (break out of 5 rooms). The results of the participant's patent drafting assistance after responding to input and suggestions from the resource persons will be asked as evidence of activities.

7. Completing the results of the patent drafting activity and submitting (the report) to the Chairman/Secretary of LPPM through the Center for IPR.

Give participants the opportunity and time for approximately one or two weeks to revise their patent draft and prepare an activity report to the Chair/Secretary of LPPM.

8. Preparing all of files/documents accompanying the patent and further doing application for patent

registration to the DJKI [9] system to obtain a patent registration number.

For the patent draft that has been revised based on suggestions from the presenters, the following documents need to be completed with the documents required for the patent registration application. Through the Center for IPR, LPPM, patent registration is carried out online to the DJKI system and paid for by Unesa.

The patent titles that were successfully accompanied during the patent drafting workshop, namely: **1**) Yoghurt Daun Kelor dan Proses Pembuatannya, **2**) Proses Pembuatan Gudeg Instan dengan Bahan Tambahan Jamur Tiram, **3**) Suplemen Pisang untuk Membantu Menurunkan Gejala Mood Swing: Depresi, Amarah, Kebingungan, Ketegangan dan Kelelahan, **4**) Antena Mikrostrip dengan Modifikasi Patch dan Ground Plane untuk Aplikasi Ultrawideband (UWB), **5**) Kombinasi Ekstrak Etanol Kayu Secang dan Jahe Merah sebagai Agen Antiinflamasi terhadap Penghambatan Denaturasi Protein BSA (Bovine Serum Albumin) dan Proses Pembuatannya, **6**) Syzyginin B dari Ekstrak Metanol Kulit Batang Jambu Semarang (*Syzygium samarangense*) sebagai Antikanker Payudara dan Antiinflamasi secara *In Silico*, **7**) Bahan Bakar Biodiesel Minyak Biji Karet dan Solar, dan **8**) Proses Pembuatan Senyawa Azo Dari Kloramfenikol. Of these eight titles have been registered to the DJKI [9] system.

Meanwhile, the following 5 titles are still in the process of applying for registration, namely: ID-Digital Sebagai Ekstensi e-KTP untuk Identitas *Online* yang *Secure*, **2**) Proses Produksi dan Formulasi Simbiotik Ternak Ruminansia Berbasis Tepung Selulosik, **3**) Proses Pembuatan Gel Berbahan Hidroksiaptit dan Ekstrak Daun Sirih Hijau (*Piper Betle* L.) sebagai Antiplak Gigi, **4**) Printed Circuit Board Skor Pertandingan Pencak Silat Berbasis Smart Pirates Menggunakan Internet of Things (IoT), and **5**) Formula Kornet Udang Angkak dengan Kombinasi Garam Kuring dan Beras Angkak.

9. Informing the patent registration application number to the patent drafting participants.

The number of patent applications that have been successfully registered to the DJKI system has been informed to the participants (inventors).

10. Distributing a questionnaires of participant response after the workshop is over.

To what extent has the workshop activity been going well, it is necessary to evaluate its implementation using the https://forms.gle/qStpGgKojUTMotxA8 platform which was adopted and adapted from https://formulir.kemdikbud.go.id/view.php?id =7537307) [10]. The aim of the questionnaire is to find out the responses of participants to the overall workshop activities and the results can be explained as follows.

As many as 29 respondents have filled out the questionnaire and the results can be explained as shown in Table 3 and Table 4 below.

Table 3. Evaluation of presenters in the patent drafting workshop

No	Aspects	Presenter				
		1	2	3	4	5
1.	Material mastery	(%)	(%)	(%)	(%)	(%)
	a. Less	0	0	0	0	0
	b. Enough	3.4	0	0	3.4	3.4
	c. Good	27.6	37.9	31	27.6	31.1
	d. Very good	69.0	62.1	69	69.0	65.5
2.	Clarity of Substance Presentation					
	a. Less	0	0	0	0	0
	b. Enough	3.4	0	3.4	3.4	3.4
	c. Good	34.5	34.5	34.5	31.1	31.1
	d. Very good	62.1	65.5	62.1	65.5	65.5
3.	Quality of language use					
	a. Less	0	0	0	0	0
	b. Enough	3.4	3.4	0	3.4	3.4
	c. Good	34.5	34.5	37.9	41.4	24.1
	d. Very good	62.1	62.1	62.1	55.2	72.5

No	Aspects	Presenter				
		1	2	3	4	5
4.	Attendance discipline					
	a. Less	0	0	0	0	0
	b. Enough	3.4	0	0	3.4	3.4
	c. Good	24.1	37.9	31	24.1	24.1
	d. Very good	72.5	62.1	69	72.5	72.5
5.	Interaction with participants					
	a. Less	0	0	0	0	0
	b. Enough	3.4	0	0	6.9	3.4
	c. Good	27.6	31	27.6	27.6	27.6
	d. Very good	69.0	69	72.4	65.5	69.0

Observing Table 3, it appears that all presenters received good and very good scores for all aspects of the assessment which included: material mastery, clarity of substance presentation, quality of language use, attendance discipline, and interaction (communication) with participants. Meanwhile, respondents' evaluation (assessment) of the implementation of the workshop can be presented in Figures 7, 8, 9, 10, and 11 below.

a) Timeliness of the implementation of activities

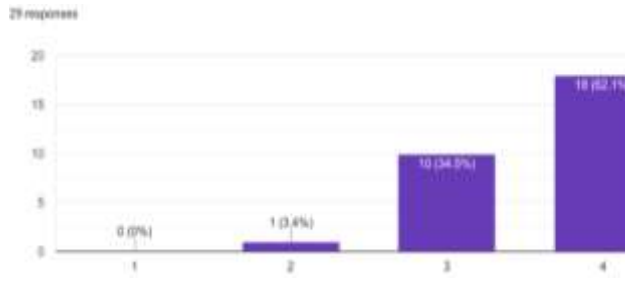


Figure 7. Timeliness of the implementation of activities

b) Committee services to event participants

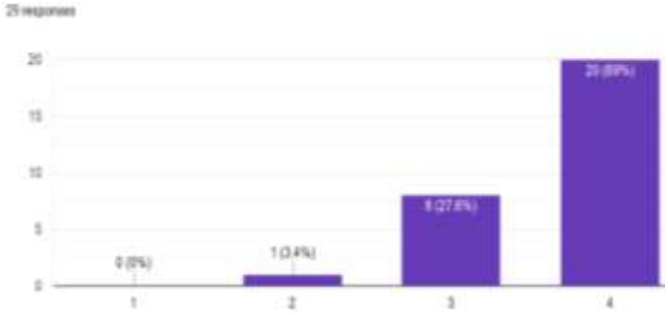


Figure 8. Committee services to event participants

c) The relationship between the theme and the material presented

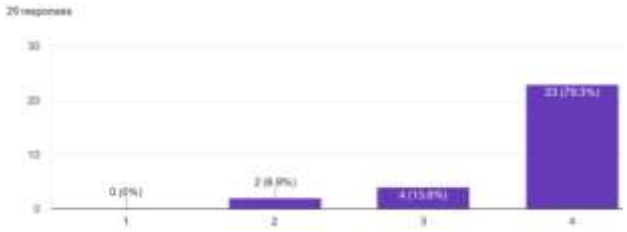


Figure 9. The relationship between the theme and the material presented

d) Activity facilities and infrastructure

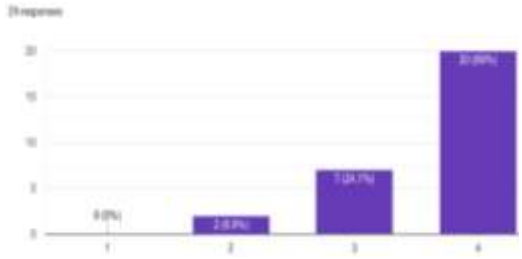


Figure 10. Activity facilities and infrastructure

e) Information delivered by the committee

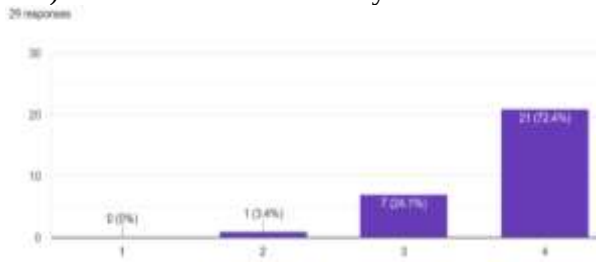


Figure 11. Information delivered by the committee

Looking at Figures 7, 8, 9, 10, and 11, it appears that all respondents gave an assessment between good and very above 90% which includes: timeliness of the implementation of activities, committee services to event participants, the relationship between the theme and the material presented, activity facilities and infrastructure, and information delivered by the committee. This means that the implementation of the patent drafting workshop has been declared successful. Also, it is suspected from the number of patents that have been successfully assisted and registered to the DJKI[9] system, although not all of them have been.

There are some suggestions or comments given by respondents, including: please improve and need to improvise especially assistance with patent descriptions; hopefully it can be done every semester; the implementation is good; it is better to be routine in holding patent workshops; similar activities should be carried out with a number of larger participants; hopefully the presenters are more competent; it is better to hold it continuously, everything has been done well; if this kind of activity can be done every semester; hopefully it will be even better; be done more often, corrected patents will be returned immediately for review further processing; it is necessary to provide special assistance for the social and humanities field; hopefully there will be assistance for Unesa lecturers who will apply for a patent; please submit a patent draft to be handled until it gets a certificate (granted); the implementation time for patent drafting is too short, especially to break out the room; need further activities to do it again with the provision of information well in advance, so that it can prepare a patent draft; hopefully in the future it will be even better; no suggestions/comments; it's good enough, hopefully (this activity) will get better in the future; and in the future it's better to do it at the beginning of the month.

4. CONCLUSIONS

Priorities, themes, and research focus at UNESA cannot be separated from the 2017-2045 National Research Master Plan (RIRN) following Presidential Regulation of the Republic of Indonesia Number 38 of 2018, that there are 10 priority research areas, namely food, energy, health, transportation, product engineering, defense and security, maritime affairs, social humanities, advanced materials, and other research fields. Of the 10 focuses, UNESA determined 6 national leading research namely leading research in the fields of sports and health, arts and culture, disability; science and technology; social humanities, and education. Three of the six areas of focus, namely sports science, arts, and disability, are UNESA's mainstays.

In accordance with RIRN, UNESA's research and community service roadmap was also prepared from 2020-2045. At the end of the research roadmap, in 2041-2045 sports science will become a world-class reference. Meanwhile, the leading research on disability and art is a reference for the Asian level. Supported by 6 national research excellence. To become a productive country, we must be able and independent in terms of mastering science and technology. This is where the role of research is needed and for this, our country must increase the quantity and quality of its research. Entrepreneurship is a mindset that uses creativity and innovation to boost the economic value of a product or the results of research or invention. It is this research-based entrepreneurship that can change Indonesia from a consumer country with minimal added value to a productive country with high added value and ultimately have an impact on increasing people's welfare. Universities must change their vision and mission from just learning universities or research universities to becoming entrepreneurial universities, namely universities that apply the results of their research for the benefit of the business world or the wider community. PKM in the 2040-2045 period is expected to increase the number of fostered partners, from 2000 partners to 2000 fostered partners. These fostered partners are expected to be examples of UNESA's success in managing community service activities in Indonesia. So that UNESA can be a reference in managing community service

AUTHORS' CONTRIBUTIONS

In this article, Darni contributes to writing, SEC as editor, LS and NN contributes to analyzing the data.

ACKNOWLEDGMENT

This research was funded by Universitas Negeri Surabaya. The authors would like to thank for opportunity to finish it.

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