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Analysis of Motives that Affects Registrant and Patent Owners in Indonesia

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Abstract. According to data in World Bank, Indonesian income per capita, in 2016, still below from another country such as Malaysia, Singapore, Brunei, and Thailand. This condition is same as high technology exports, in 2015, where Indonesia still lack from the countries. It can be concluded from income per capita and high technology exports that patent in Indonesia still lack. Based on data Directorate General of IPR said that the total of active patent in Indonesia is 15.343, during 10 years (2007-2016). This amount is still far away compared to patent from another country that attain 46.838. To increase the number of patent registration, it is necessary to research the motive of patent owners and registrants to register their patent. This research is conducted on patent owners who have registered their invention at the Directorate General of IPR. The results of this study will be made recommendations for the Directorate General of IPR and consultants in socializing the importance of patent registration. Patent registration factors or motives vary by stakeholder. Overall there are 4 factors, in individual stakeholder there are 2 factors, and enterprises stakeholder there are 3 factors. The differences of motives are according to the importance every stakeholder.

1. Introduction

The rapid flow of free trade increasingly triggers technological developments to support the demand of the higher quality of the products. Along with this line, people also increasingly aware of the importance of the role of intellectual property rights in supporting the development of technology. In Indonesia, the organization that handles intellectual property rights is the Directorate General of Intellectual Property (DGIP) Ministry of Law and Human Rights or commonly referred to as the Directorate General of Intellectual Property.

There are various categories of intellectual property, one of which is the patent. A patent, according to the Directorate General of Intellectual Property Ministry of Law and Human Rights, is an exclusive right granted by the government to the inventor of his/her invention in the field of technology. The invention means an inventory idea poured into a specific problem-solving activity in the field of technology, it can



be a product or process, or a refinement and development of a product or process. Generally, the primary motive of a person registering a patent is to protect his/her invention from the imitation actions, this motive is then referred to as a traditional motive. According to [1], a patent can be used as an objective strategy, including traditional motive. In addition to being an objective strategy, patents are also used as a strategy of competition and cooperation, as well as differentiating patent strategies based on company size.

Several studies on the motives for patenting in some developed countries resulted in diverse conclusions. According to [2], revenues from licensing the use of the patented invention and international market access have the highest value for patent owners in Germany. A research in France showed that the motive of patenting is the defensive blockade and to improve the position of negotiations. While research in Japan stated that the patents are used for the exchange in the use of patent with other parties and the offensive blockade [3].

The phenomenon of patents, examined in the 1990s, in the United States, Japan, and several European countries known as developed countries, indicated an increase in patent registration when the research and development section has a small expenditure on the invention [4]. This can happen for the following reasons. First, the performance of research and development becomes more efficient and differentiated. Secondly, patents are deemed advantageous to develop various things in technology. Third, patent strategies change with times and become more widespread and complex [1].

Based on the World Bank data, compared to other Asean countries, the per capita income of Indonesia's population, in 2016, is still inferior to Malaysia, Singapore, Brunei, and Thailand. Similarly, in terms of advanced technology exports, in 2015, Indonesia is still far behind compared to Singapore, Malaysia, Philippines, Thailand, and Brunei. Because of this minimum income and technology exports, it can be said that the patent in Indonesia has not been too considered at. In the data, there are a total of 15,343 patents from Indonesia which are actively registered in the period of 10 years, 2007 - 2016. This is very far behind the patents originating from abroad, which reached 46,838 patents.

According to a research study conducted by [1] in Germany, the patent registrant has a variety of motives or purposes. These are then adjusted with the strategies and instruments owned by the registrants and patent owners. A theory of reasoned action is constructed using the basic assumption that humans act consciously and consider all available information. The desire to act is determined by subjective attitudes and norms. The definition of an action can be viewed from various related elements, one of them is the motive. From this theory, it can be concluded that the motive is needed in order to have the reason to do something.

As a developing country, which continues to develop innovations in the field of technology, not many patents were originating from Indonesia. This is what makes the researchers want to adopt research studies by [1] into the scope of Indonesia. The aim is to find out the motives, instruments, and strategies for registering the patent in Indonesia.

2. Literature review

A patent is an exclusive right granted by the government to the inventor of his/her invention in the field of technology. The invention means an inventory idea poured into a specific problem-solving activity in the field of technology, it can be a product or process, or a refinement and development of a product or process.

To be able to get the patent (patentable), the invention must meet the substantive requirements, which are:

- New: must not be published in any media, patent/non-patent, national/international, prior to registering a patent and obtaining the date of receipt.
- Contains inventive steps: patents will only be granted for unexpected, or unexplored inventions, for persons with expertise in the related field.

- Can be applied industrially: an invention must be able to be used repeatedly with consistent and unchanging functions
- Some inventions that can not be given a patent, are:
- The process or product of which the notice and use is contrary to applicable legislation, religious morality, public order or social morality;
- Methods of examination, treatment, medication and/or surgery applied to humans and/or animals;
- Theories and methods in the field of science and mathematics; or
- All living things, except micro-organisms; and

An essential biological process for producing plants or animals, except for non-biological processes or microbiological processes.

There are two types of patent, patent or regular patent and simple patent. First is regular patent. A patent on the invention in the field of technology in which the person who invented it, for a certain period of time, handles his/her own invention or gives his/her consent to the other party to execute it. Second is simple patent. A simple patent on the invention in the form of a new product or tool and has a practical utility value due to its shape, configuration, construction or component.

Human behavior is always motivated by motives. Variety of motives is coloring human life, Motive is derived from the Latin word *movere* which means to move. Motive, referred to as needs, is an impetus that is attached to a goal [5]. A motive is a drive, desire, urge, and other driving forces coming from within or can be said as the reason someone does something, while motivation is the power that directs or distributes the motive [6].

Motivation theory itself is a concept that provides an explanation of the needs and desires of a person and shows the direction of his/her actions. Various efforts undertaken by humans are to meet the desires and needs, but the desires and needs are not easy to meet without maximum effort. Because the needs of each person are different, so of course, there are also different ways to meet those needs. In fulfilling the needs, a person will act in accordance with the impulses possessed and the underlying behavior, for it can be said that in a person there is a power that leads to his/her actions [7].

Factor analysis is one of the dependency analysis techniques where all variables have the same role so the overall relationship structure between the variables that characterize the objects of observation must be considered. The most important goal of factor analysis is to explain the relationship between many variables in the form of several factors. The relationship between the related variables was examined and represented in several basic factors. In this study, researchers wanted to determine the number of factors of the variables that influence the technical committee to be involved in the preparation of standards. The factor analysis was done by using SPSS software.

3. Research methods

It can be said that Indonesia is still losing in the area of per capita income, exports of advanced technology, and the number of patent registries in the country compared to other countries. However, the patent registrars and owners in Indonesia continue to increase as the times progress. More and more patents coming from within the country can suppress foreign patents registered in the country and able to improve the capabilities of national industrial technology. Despite the increase, however, the motives of each patent registrar and owner are still unknown. This is what underlying the research to determine the motives of the patent registrars and owners in Indonesia in registering the patent. By knowing the motives, it can be used as the input for the Directorate General of Intellectual Property Ministry of Law and Human Rights to create a strategy to increase the patent registrars and owners in Indonesia. The purposes of this research are as follows: to analyze the motives of the patent registrars and owners in Indonesia, to analyze the differences in the motives of the patent registrars and owners and to recommend the strategy to increase the number of patents in Indonesia.

3.1 Research variables and indicators

The determination of variables or motives of this study is based on the previous researches. The following is the research variables used that refer to previous researches [1][8]. The variables are equipped with indicators to see the importance of these variables. Table 1 describes research variable that consist of five variables and its indicators. The following are indicators used as can be seen in table 1:

Table 1. Research variables

| Motive | Code | Indicator |
|------------|------|---|
| Protective | A1 | Protect from imitation action |
| | A2 | Obtain protection within the country |
| | A3 | Obtain protection in the international market |
| | A4 | Have the freedom to use patent |
| Barrier | B1 | As an offensive blockage |
| | B2 | As an defensive blockage |
| Reputation | C1 | Improving the image of technology |
| | C2 | Improving reputation |
| | C3 | Introducing invention and agency |
| Exchange | D1 | Improving the position in the cooperation |
| | D2 | Widening the access to the market center |
| | D3 | Having a potential exchange guarantee |
| | D4 | Earning revenue from licensing |
| Internal | E1 | Motivate the staff |
| | E2 | As an internal, R&D, performance indicator |
| | E3 | As the capital to run the business |

4. Analysis and discussion

The number of respondents' data was 500 respondents, but the respondents that could be contacted either by email or online application were 410 respondents. Respondents who cannot be contacted due to invalid email and unused online applications could not be contacted. The results of the questionnaires obtained were 88 respondents. This number indicates that the overall response rate is 21%. Respondents were grouped by stakeholder companies, universities, non-governmental and private research institutions, as well as individuals. The stakeholders consisted of individuals which amounted to 33 respondents with a response rate of 22% and followed by the companies which amounted to 31 respondents with a response rate of 26%. From the university, there were 19 respondents with a response rate of 17% and from the research institutions, there were 5 respondents with a response rate of 17%. The total number of patents held by all respondents was 199 patents with 55 respondents having one patent. The patents were mostly from basic chemical industries by 26% and other various industries by 21%. In addition, there were 13% from the farm sector, followed by infrastructure, utilities, and transportation sectors by 11%. The trade, service, and investment sectors by 9%. Industrial of consumer goods and Property, real estate, and building construction sectors by 8%. And the last was the mining sector by 6%.

4.1. Factor analysis

Below is the result of grouping the factors formed using factor analysis as can be seen in table 2:

Table 2. Factor analysis and descriptive statistics

| Stakeholder | Motive of Having and Registering Patents | Mean | Category |
|-------------|--|------|----------------|
| Overall | Exchange Motive (D1, D2, D3, D4, E1) | 4,14 | Agree |
| | Protective Motive (A1, A2, A3, A4, B1, B2) | 4,26 | Strongly Agree |
| | Internal Motive (E2, E3) | 4,19 | Agree |
| Individual | Reputation Motive (C1, C2, C3) | 4,25 | Strongly Agree |
| | Internal Motive (A1, C3, D1, E1, E2) | 4,12 | Agree |
| | Exchange Motive (A3, B1, B2, D2, D3) | 4,79 | Agree |
| Company | Exchange Motive (D1, D2, D3, E2) | 4,42 | Strongly Agree |
| | Reputation Motive (C1, C2, C3) | 4,32 | Strongly Agree |
| | Internal Motive (D4, E1, E3) | 4,23 | Strongly Agree |

The results of the data processing of respondents have formed 4 form factors that influence registering and owning patents. The first factor consists of 5 indicators: improving the position in the cooperation (D1), widening the access to the market center (D2), having a potential exchange guarantee (D3), earning revenue from licensing (D4), and as the capital to run the business (E3). This shows that this factor is dominated by exchange motives coupled with one internal motive. The second factor consists of 6 indicators: to protect from imitation action (A1), to obtain protection within the country (A2), to obtain protection in the international market (A3), to have the freedom to use patent (A4), as an offensive blockage (B1) as an defensive blockage (B2). In this factor, all the indicators are dominated by putting some protection and blockage motives. The third factor is to motivate the staff (E1) and as an internal, R&D, performance indicator, (E2). The two indicators that fill this factor all come from internal motives. The last factor, the fourth factor consists of improving the image of technology (C1), improving reputation (C2), and introducing invention and agency (C3). All indicators in the third factor come from reputation motives. The number of factors formed based on factor analysis is different from the number of reference factors used by the researchers. There are four factors formed in this research, while there are five factors formed on the references. The result of factor analysis as a whole does not dispose the variables, it means all indicators are related to the motive of registering and owning patents.

Individual stakeholders have fewer factors than the overall factors, which are only 2 factors. The first factor is protecting from imitation action (A1), introducing invention and agency (C3), improving position in cooperation (D1), and motivating staff (E1), as indicator of internal performance, R & D (E2). It can be seen that this factor consists of protective, reputation, and exchange motives, and two internal factors. The second factor is obtaining protection in the international market (A3), as an offensive blockage (B1), as a defensive blockage (B2), widening access to market center (D2), and having a potential exchange guarantee (D3). This factor consists of a protective motive as well as two blockage motives and an exchange motive. Individual stakeholders have the least form of factors. Each factor has five indicators. This shows that there are only 10 indicators of the motives to register and have a patent and there are 6 indicators issued. Factors formed by individual stakeholder have undergone a lot of changes in the arrangement of indicators in each factor, thus indicating that there is no dominant variable in the factor formed. This significant change is based on the interests and motives of individual stakeholders in registering and owning patents.

The factor analysis processing on the respondents from the company stakeholders resulted in 3 factors formed. The first factor is improving the position in the cooperation (D1), widening the access to the market center (D2), and having a potential exchange guarantee (D3), as an internal performance indicator,

R & D (E2). This factor is dominated by the exchange motive and one internal motive. The second factor is improving technology image (C1), improving reputation (C2), and introducing invention and agency (C3). The overall indicators come from reputation motives. The third factor is earning revenue from licensing (D4), motivating the staff (E1), as the capital to run the business (E3). This factor has two internal motive indicators and one exchange motive. The calculation result of factor analysis on company stakeholders shows 3 factors formed. Ten indicators are related to the motives for registering and owning patents. Then there are six indicators that are not related to the motives for registering and owning patents. Of the three factors formed, the two factors are similar to the indicators used previously. The first factor is filled by three indicators of the exchange motive. All the indicators present in the second factor are dominated by indicators on the reputation motive. The similar results of the factors formed with the factors previously used indicate the importance of each indicator on the motive used is the same so that the results of the grouping of factor analysis have indicators that are almost similar to those used in the references.

4.2 Descriptive analysis

Table 2 has grouped the categories of each factor in the influence or motives in registering patents. In descriptive statistical results shows that the factor with the largest mean value is the second factor or protective factor which contains indicators A1, A2, A3, A4, B1 and B2 with a mean of 4.26. Based on the indicators on the second factor it is known that the highest rated motives in registering and owning patents are for protection purposes as well as the blockage of the use of the patent by the other parties who have the content for protection. This is similar to the result of an interview conducted with the Directorate General of IPR that the main motive to register and own patents is to get protection. Obtaining this protection has the same context in which the inventions with the patent are not imitated by irresponsible parties for all purposes. The fourth factor with reputation indicators comes as the second with the mean value of 4.25 or with indicators C1, C2, C3. In this factor, all indicators are indicators of reputation. So overall after getting the right of protection to protect, a factor that has a high value is for the patent owner's reputation. With patents, the patent owner will have added value in bringing the good name of stakeholders and better known by other parties.

The factor with the third highest value is an internal factor with indicators E2 and E3. This factor is a performance factor to see the internal achievements of stakeholders in innovating in patents with a mean value of 4.19. While the factor with the lowest value is the fourth factor with a value of 3.14. This factor contains all indicators of the exchange motive and one internal motive indicator. This factor includes the motive of registering and owning patents, but this is not a major factor. This factor is more focused on relationships with other parties.

There are 2 resulting factors generated on individual stakeholders. The factor with the highest mean value are the second factor for exchange with indicators A3, B1, B2, D2, D3 and a mean value of 4.79. Descriptive statistics of individual stakeholder shows that the dominant indicators in the motive of registering and owning patents are indicators of obtaining protection in the international market and widening access to the market centre. It can be seen that stakeholders expect the protection of their patents in the country from the invasion of patents originating from abroad. This is because the number of foreign patents is more than the number of domestic patents. Other Indicators are as part of individual plans to be able to more easily reach the desired market centre based on the function or the patent sector. An individual stakeholder is the owner and registrant of the patent on the individual's behalf and does not represent any agency. While the other factor is the first factor with indicators A1, C3, D1, E1, E2 and a mean value of 4,12. The existing indicators are a combination of various motives. The highest rated indicator is protection from imitation action. This indicator is the same as the main indicator of the patent motives of the stakeholders as a whole.

4.3. Recommendation analysis

The data on the growth of the number of patent owners in Indonesia has increased significantly, but this number still cannot be compared with other countries that register their patents in Indonesia, for example, America and Japan. This shows that the awareness of the importance of patent protection in Indonesia is still very lacking. The results of this research get output in the form of the motives for registering and owning patents on each stakeholder. Recommendations that can be given to the Directorate General of IPR is to provide a further understanding of the benefits obtained in registering and owning the patents to each stakeholder. Provide socialization and motivation about the benefits of patents in organizations such as universities, research centres, and companies as well as for individual innovators. This is because the motives examined in this study indicate that patent motive is not only for protection but there are still more motives that are in accordance with the interests and needs.

For individual stakeholders, the Directorate General of IPR can provide an understanding of patent motives regarding offensive blockage, ie prevention of the use of technology in the same or different fields or a combination of several fields by others. This motive means protecting the use of patents that have been owned. This motive has the lowest mean value, in other words, not many individuals know about it yet. This is because the motive known to individuals based on the questionnaire is mostly only to protect from imitation actions, so with this understanding, it can make individual stakeholders not only know one motive.

For company stakeholders, the Directorate General of IPR can provide an understanding of the motive of earning revenue from licensing or royalty. Means the use of patents will provide income for the company. This motive has the lowest mean value, in other words, not many companies are aware of this. This is because the motives known by the company based on the questionnaire are improving the position in cooperation and widening the access to the market center, so with this understanding, it can make company stakeholders not only know one motive.

By knowing the motive, which is equal to the patent benefit, it is expected that the number of patents from domestic can be increased. Each stakeholder can use the patent ownership for the interests that are appropriate to the needs of each stakeholder. The process of socialization of the importance of IPR is very helpful for stakeholders in recognizing IPR, which will increase the number of new patent registration in the Directorate General of Intellectual Property Rights.

5. Conclusion

Based on the analysis and discussion in previous section, there are several conclusions. The validation of these patent motives grouping is required because the results shown are not necessarily the same as the initial grouping. It can be seen that the factors formed decreases from 5 to 4. Indicators that are within the factors formed are different from the initial factors. The combination of indicators and the reduction in the number of these factors occurs because of the conformity between the indicators with each other in accordance with the answers obtained from the questionnaire. The factors of owners and registrants of the patent that became the motives for registering the brand in Indonesia were formed into 4 factors: the protective factor, consisting of protecting from the imitation action, obtaining protection within the country, obtaining protection in the international market, having the freedom to use patent, offensive blockage, defensive blockage and reputation factors include improving the image of technology, enhancing good names, and introducing invention and agencies with strongly agreed categories. Another factor is the exchange factor, consisting of improving the position in cooperation, widening access to the market center, having potential exchange guarantees, earning revenue from licensing, motivating the staff, and internal factors, as an internal, R&D, performance indicator, as a business capital with the agreed category. Each stakeholder has different motives for registering to have patents. For individual registrants, the motive factors consist of 2 factors, ie internal factors (A1, C3, D1, E1, and E2) and exchange factors

(A3, B1, B2, D2, and D3). The main factor with the highest value is the exchange factor with the dominant indicator of obtaining protection in the international market and widening the access to the market center. It can be seen that stakeholders expect the protection of their patents in the country from the invasion of patents originating from abroad. This is because the number of foreign patents is more than the number of domestic patents. Other Indicators as part of individual plans to be able to more easily reach the desired market center based on the function or the patent sector. As for the stakeholder of the company the motive factors consist of 3 factors, namely the exchange factor (D1, D2, D3, E2), reputation (C1, C2, C3), as well as internal factor (D4, E1, E3). The main factor with the highest value is the exchange factor, the indicator with the highest value is to improve the position of cooperation and widen the access to the market center. This is very reasonable because by having a patent, the company's position will be judged better and the access to market centers related to the patent sector becomes easier.

Every stakeholder has different motives for registering patents. For individual registrants, the motive factor consists of 2 factors, namely internal factors and exchange factors. The main factor with the highest value is the exchange factor with the dominant indicator of obtaining protection in the international market and widening the access to the market center. It can be seen that stakeholders expect the protection of their patents in the country from the invasion of patents originating from abroad. This is because the number of foreign patents is more than the number of domestic patents. Other Indicators as part of individual plans to be able to more easily reach the desired market center based on the function or the patent sector.

The recommendation to be given to the Directorate General of Intellectual Property Rights in the issue of registration of patent protection rights is to provide socialization and motivation on the benefits of patents in organizations, universities, research center, and companies as well as individual innovators. This is consistent with the motives studied in this research that patent motives are not only for protection but there are still more motives that are in accordance with the interests and needs. By knowing the motive, which is equal to the patent benefit, it is expected that the number of patents from domestic can be increased.

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