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How are Defensive Patents Defined and Utilized as Business Strategic Tools?: Questionnaire Survey to Japanese Enterprises Having Many Defensive Patents

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Abstract--Japanese enterprises have tremendous number of patents, but the half numbers of patents aren't used. In addition, 60% of unused patents are considered as "defensive patents". However, the enterprises don't have clear understandings on the defensive patents how it's defined and managed. The defensive patent hasn't yet been clearly defined by prior researchers. And Japanese enterprises have various opinions on its definition and utilization. Therefore, in this study, we performed a questionnaire survey to top 200 Japanese enterprises which have high number of patents. According to our survey, about 90% of enterprises think that defensive patents are necessary, and the way of thinking that the defensive patents can be utilized with its role as defending tools against competitors, has been well penetrated to most of the enterprises which made responses to our survey. So, we clarified the features of defensive patents from two aspects which are "the evaluation of the patent" and "the relation to the environment and the strategy". Furthermore, we recommend for the enterprises to keep managing patents according to the features. The purposes of defensive patents have been also clarified with our survey. There are mainly four reasons why Japanese enterprises have defensive patents.

I. INTRODUCTION

In 2009, about 193,000 patents were registered in Japan. In these patents, Japanese applicants received 164,000 patents which were 85% of total patents registered. On the other hand, about 167,000 patents were registered in the United States Patent and Trademark Office (USPTO) in 2009 and about 52,000 patents were registered in the European Patent Office (EPO) in 2009. Numbers of registrations by resident applicants in each patent office are about 82,000 patents (49% of total registration patents in USPTO) and about 28,000 patents (54% of total registration patents in EPO). Not only number of patent registration, but also the ratio of patents by resident applicants in Japan is bigger than the ratio in USPTO and EPO. The Japanese receive tremendous number of patent rights in this way. And 1,270,000 patent rights exist in Japan, and Japanese have the most of 1,137,000 patent rights.

It is pointed out that a lot of patents are not used, as a problem of the patents that Japanese enterprises have [1][2][3]. The Japanese Patent Office (JPO) performed the questionnaire to the Japanese enterprises and investigated the situation of use of patents every year. Figure 1 shows the situation of Japanese patents [4]. In this figure, "used patents" include not only patents carried out in the enterprise, but also patents used for licensing. In the recent data, 51.5% of patents are used in enterprises, and remaining 48.5% of

patents are not used. Furthermore, in this investigation, the ratio of defensive patents among unused patents is investigated. Defensive patents occupy 29.4% of total patents, which is about 60% of unused patents.

As a characteristic of patents owned by the Japanese enterprises, so many patents called defensive patents are maintained by the Japanese enterprises. The term of "defensive patent" is often used to explain the purpose of the patent which is not used. According to JPO's investigation, a defensive patent is defined as a patent right that is not to be used in the enterprise and has to prevent other enterprises to use the technology protected by the patent, even if they themselves do not use the patent for their business. However, this definition isn't enough to explain about the defensive patent because the term of "defend" is used to explain about the defensive patent. So, from the JPO's survey and the definition, it is difficult to understand what kind of patents Japanese enterprises define as a defensive patent.

As other definitions of the defensive patent, H. Iida explains "The defensive patent is located around core business but it is the patent portfolio which is not related to the core business." [5] And A. Gibbs and B. DeMatteis explain "The defensive patent is an alternative technology to conflict for the existing line of products and technology development in a certain enterprise." [6] In addition to these definitions, there are some definitions of the defensive patent in other literature [7][8][9]. Various definitions are made about the defensive patent in this way. However, it is considered that the enterprises have own standards and they define defensive patents.

II. THE PURPOSE OF THIS RESEARCH

The defensive patent is often used as one of the category to classify patents that Japanese enterprises have. The definition and the interpretation of defensive patents are various. However, it has not been investigated from the aspect of the user of the patent system up to now. In this study, we clarify the defensive patent how the Japanese enterprises recognize it. We approached this research from two aspects. One approach is "What kind of patent become defensive patents" and the other is "what kind of environment and strategy force Japanese enterprises to have defensive patents". The reason why Japanese enterprises have unused patents is also clarified through this study.

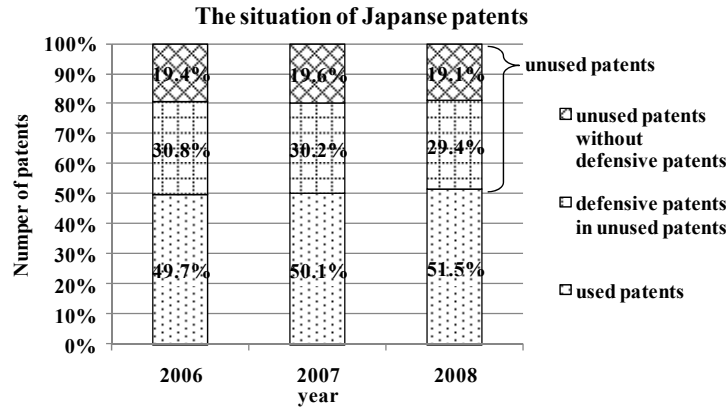


Figure 1: The situation of Japanese patents [4]

III. METHODOLOGY

It is preferable to compare the feature of defensive patents and other patents objectively to know about defensive patents. However, it is difficult to classify patents because there are various definitions of defensive patents. Even if patents are classified by using a certain definition, the result may be different from actual IP management of Japanese enterprises. Then, we decided to perform a questionnaire survey in advance of the objective investigation.

The study procedure is comprised of three steps; making the questionnaire, performing the questionnaire and analysis results of the questionnaire.

A. Making the questionnaire

At first we investigate the management situation of defensive patents in Japanese enterprises. Based on the purpose of this study, we designed questions about defensive patents from the aspect of “the evaluation of the patent” and “the relation to the environment and the strategy”.

(1) The management situation of the defensive patent

We asked about the situation that quantity of defensive patents the enterprises has, the necessity of defensive patents, and the grasp situation of the defensive patent in the enterprise. From these questions, we investigate the present situation of defensive patents in the enterprise. If many enterprises have and need many defensive patents, the concept of defensive patents is strongly recognized. And we can show the significance of this study about defensive patents is very high.

(2) The evaluation of patents

It is considered that the enterprise chooses valuable patents as defensive patents from patents that the enterprise received. It is thought that there are five aspects for the evaluation of the patent. These aspects are “the technology”, “the law”, “the time of using the patent”, “the value for the enterprise” and “the relations with patents the enterprise already has”. We made questions about more detailed items in each aspect. In the evaluation from the technological aspect,

“basic technology used widely”, “applied technology about carrying out in the enterprise”, “alternative technology for carrying out in the enterprise”, “high novelty”, “high effect” and “high cost to develop the technology” are included. In the evaluation from the legal aspect, “long residual period of the right”, “wide area of the right range”, “difficulty of evasion”, “ease to find infringement” and “the right without defects” are included. In the evaluation from the aspect of the time of using the patent, “the results that the enterprise used for a past” and “possibility to use in the future” are included. In the evaluation from the aspect of the value for the enterprise, we used VRIO analysis [10]. These are “capability of patent to exploit opportunities or neutralize external threats”, “rarity of the patent”, “difficulty of the imitation by needing cost to develop and carry out the technology” and “organization to carry out the patent” are included. In the evaluation from the relations with patents the enterprises already have, “the residual period of other patent rights”, “the number of other patent rights” and “the right contents of other patent rights” are included.

We investigated what kinds of patents the enterprises value as a defensive patent by these questionnaire items.

(3) The relation to the environment and the strategy

It is considered that whether the enterprises have defensive patents is affected by the environment and the strategy. In this study, we ask questions whether the enterprises have defensive patents in each classification of frameworks which are well known.

As environmental classifications of the enterprises, we use the product life cycle [11] and the 5 forces analysis [12]. In the product life cycle, penetration of the product is divided in four stages which are “the introduction stage”, “the growth stage”, “the maturity stage” and “the decline stage”. We ask whether the enterprises have a lot of defensive patents in each stage. The 5 forces analysis classifies the players of the industry in five kinds. These are “competitor”, “buyer”, “supplier”, “new entrants” and “substitutes”. And the analysis is technique to plan the countermeasure to each player. We ask questions whether the enterprises have defensive patents as the way to have the superiority for the five kinds of players.

As strategy classifications of the enterprises, the competitive positions [12][13] and the three generic strategies [14] are known well. The competitive positions show four types of enterprise's positions by the viewpoint of market share and the strategy. We ask questions whether the enterprises have many defensive patents in each position which are "the leader", "the challenger", "the niche player" and "the follower". The three generic strategies classify the strategies by the source of the competition and the market range of the competition. We ask questions whether the enterprises have many defensive patents in each strategy which are "the cost leadership strategy", "the differentiation strategy", and "the segmentation strategy".

B. Performing the questionnaire

We chose top 200 Japanese enterprises which have high number of patents as the object of the questionnaire survey in this study. These enterprises receive about more than 100 patents every year in Japan. Such enterprises receiving a lot of patent rights are expected to have patents not only for carrying out in the enterprises but also for the purpose of defense.

We sent the questionnaire by an E-mail or mail and collect the result of questionnaire by web input or mail. Choices of the answer are "4: Fully Agree", "3 Agree", "2: Disagree" and "1: Fully Disagree" in all questions.

C. Analysis results of the questionnaire

We analyze results of questionnaire from two aspects. One is the ratio of agree and disagree in each question. The other is the comparison the ratio of agree or disagree between questions. "RA (Ratio of Agreement)" that adds the ratio of "4: Fully Agree" and "3 Agree" is used to analyze results of the questionnaire. In the question that RA is more than two-thirds, we judge the item is tend to be necessary for the defensive patents. On the other hand, in the question that RA is less than one-thirds, we judge the item is tend to be

unnecessary for the defensive patents. So we clarify the common items that many enterprises agree or disagree about the defensive patent.

IV. RESULT

We obtained effective answers from 95 enterprises. The effective answer rate was 47.5%. Results of each question are following.

A. The management situation of the defensive patent

Table 1 shows results regarding the management situation of the defensive patent. 67.4% of enterprises have a lot of defensive patents (Q1). Furthermore, 87.4% of the enterprises think the defensive patent is necessary (Q2). These results show the concept of defensive patent penetrated widely in Japanese enterprises to manage the patent applications. 59.0% of enterprises answered that we can grasp defensive patents out of patents they have (Q3).

In the comparison between Q2 and Q3, the difference is about 28%. These enterprises recognize that defensive patents are necessary. However, its own defensive patents cannot be understood. This shows some enterprises treats the defensive patents conceptual without defining clearly it. The management of the patent from defensive point of view has a problem in this way. So, the significance of this study which are tried to clarify about the defensive patent is very high.

B. The evaluation of patents

(1) The technological aspect

Table 2 shows results regarding the evaluation of patents from the technological aspect. 70.6% of enterprises agree about "the alternative technology for carrying it out in the company (Q6)" and 68.4% of enterprises agree about "high effect (Q8)" These two items are tend to be considered mainly as defensive patent in the technological aspect

TABLE 1: RESULTS REGARDING THE MANAGEMENT SITUATION OF THE DEFENSIVE PATENT

Question	4	3	2	1	RA
Q1: We have a lot of defensive patents.	11.6%	55.8%	28.4%	4.2%	67.4%
Q2: We think that the defensive patent is necessary.	20.0%	67.4%	10.5%	2.1%	87.4%
Q3: We can grasp defensive patents out of all patents we have.	7.4%	51.6%	36.8%	4.2%	59.0%

4: Fully Agree, 3 Agree, 2: Disagree, 1: Fully Disagree, RA: Ratio of Agreement

TABLE 2: RESULTS REGARDING THE EVALUATION OF PATENTS FROM THE TECHNOLOGICAL ASPECT

Question	4	3	2	1	RA
Q4: We consider the patent is a basic technology used widely when we decide as the defensive patent.	7.4%	42.6%	44.7%	5.3%	50.0%
Q5: We consider the patent is applied technology about carrying out in the enterprise when we decide as the defensive patent.	3.2%	51.6%	42.1%	3.2%	54.8%
Q6: We consider the patent is the alternative technology for carrying it out in the enterprise when we decide as the defensive patent.	7.4%	63.2%	27.4%	2.1%	70.6%
Q7: We consider the patent has the high novelty when we decide as the defensive patent.	4.3%	38.3%	46.8%	10.6%	42.6%
Q8: We consider the patent has the high effect when we decide as the defensive patent.	9.5%	58.9%	27.4%	4.2%	68.4%
Q9: We consider the patent needs high cost to develop the technology when we decide as the defensive patent.	2.1%	17.9%	64.2%	15.8%	20.0%

4: Fully Agree, 3 Agree, 2: Disagree, 1: Fully Disagree, RA: Ratio of Agreement

The Japanese enterprises consider the possibility that the technology may replace the enterprise's technology by bringing same solutions or effects become the threat. They prevent other enterprises from using the technology, and try to reduce the threat by obtaining such an alternative technology as defensive patents.

And also the Japanese enterprises consider the threat that other enterprises obtain alternative technology to bring higher effects. This means that the difference in the performance of the product becomes big by such alternative technology. Therefore the enterprise gives priority to the technology to bring higher effects in the management of the defensive patent.

In addition, "high cost to develop the technology (Q9)" was not influenced by the defensive patents. This indicates that such a precious technology is not thought as the defensive patent.

(2) The legal aspect

Table 3 shows results regarding the evaluation of patents from the legal aspect. Many enterprises agreed in the question items of "long residual period of the right (Q10)", "wide area of the right range (Q11)", "difficulty of evasion (Q12)" and "easiness to find infringement (Q13)". In five questions, four items have high ratio of agreement.

These results indicate that the evaluation from the legal aspect is important for defensive patents. As the defensive patent, Japanese enterprises select patents which have widely effect and residual period of the right, and expand the possibility to take legal actions by the patent rights for infringement by other enterprises. On the other hand, opinions were divided in "the right without defects (Q14)".

When the plaintiff insist on the infringement of the patent right, the defendant usually confirms whether the patent is the right without defects and insist the patent is invalid if there are defects. Therefore it is essential for the patent to be without defects. However, such a performance is not necessary for the defensive patents, because more than half enterprises don't conscious about defects of the patent from Q14.

(3) The aspect of the time of using the patent

Table 4 shows results regarding the evaluation of patents from the aspect of the time of using the patent. 80.0% of enterprises agree in the question of "possibility to use in the future (Q16)". On the other hand, in the question of "the history that the enterprise used in the past (Q15)", opinions were divided.

In the enterprise, technologies are developed with anticipations of the future environment. The enterprise receives patents through development activities. In these patents, some patents are not yet used at present by some kinds of reasons but planned to use in the future. But the technology which plan to use in future in the enterprise may be developed by other enterprise. Therefore the enterprise has such a future technology as a defensive patent to prevent other enterprise from using.

(4) The aspect of value for the enterprise

Table 5 shows results regarding the evaluation of patents from the aspect of value for the enterprise. In the VRIO analysis, Yes/No are answered for four questions in turn about resources the enterprises have [10]. However, in this study, we ask four questions independently.

TABLE 3: RESULTS REGARDING THE EVALUATION OF PATENTS FROM THE LEGAL ASPECT

Question	4	3	2	1	RA
Q10: We consider the patent has long residual period of the right when we decide as the defensive patent.	26.3%	55.8%	15.8%	2.1%	82.1%
Q11: We consider the patent has wide area of the right range when we decide as the defensive patent.	20.0%	56.8%	23.2%	0.0%	76.8%
Q12: We consider the patent has difficulty of evasion when we decide as the defensive patent.	16.8%	60.0%	23.2%	0.0%	76.8%
Q13: We consider the patent has easiness to find infringement when we decide as the defensive patent.	15.8%	55.8%	27.4%	1.1%	71.6%
Q14: We consider the patent is the right without defects when we decide as the defensive patent.	7.4%	37.2%	50.0%	5.3%	44.6%

4: Fully Agree, 3 Agree, 2: Disagree, 1: Fully Disagree, RA: Ratio of Agreement

TABLE 4: RESULTS REGARDING THE EVALUATION OF PATENTS FROM THE ASPECT OF THE TIME OF USING THE PATENT

Question	4	3	2	1	RA
Q15: We consider the patent has the history that the enterprise used in the past when we decide as the defensive patent.	8.4%	41.1%	45.3%	5.3%	49.5%
Q16: We consider the patent has possibility to use in the future when we decide as the defensive patent.	21.1%	58.9%	20.0%	0.0%	80.0%

4: Fully Agree, 3 Agree, 2: Disagree, 1: Fully Disagree, RA: Ratio of Agreement

TABLE 5: RESULTS REGARDING THE EVALUATION OF PATENTS FROM THE ASPECT OF VALUE FOR THE ENTERPRISE

Question	4	3	2	1	RA
Q17: We consider the patent has capability to exploit opportunities or neutralize external threats when we decide as the defensive patent.	9.5%	63.2%	25.3%	2.1%	72.7%
Q18: We consider the patent has rarity when we decide as the defensive patent.	3.2%	26.3%	58.9%	11.6%	29.5%
Q19: We consider the patent has difficulty of the imitation by needing cost to develop and carry out the technology when we decide as the defensive patent.	6.3%	43.2%	43.2%	7.4%	49.5%
Q20: We consider the patent has adaptability with the organization to carry out the patent when we decide as the defensive patent.	1.1%	36.8%	53.7%	8.4%	37.9%

4: Fully Agree, 3 Agree, 2: Disagree, 1: Fully Disagree, RA: Ratio of Agreement

72.7% of enterprises agreed about “capability to exploit opportunities or neutralize external threats (Q17)”. This question is related to the economic value in VRIO analysis. Patents that influence the enterprise's business are selected as defensive patents. On the other hand, only 29.5% of enterprises agreed about “rarity (Q18)” and this shows rarity is not conscious very much. From this, unique technology in comparison with other techniques cannot become the defensive patent.

Furthermore, the question of “adaptability with the organization to carry out the patent (Q20)” is not agreed so much. From this, the defensive patent is not to carry out in the enterprise. Therefore the purpose of defensive patents is not to exploit opportunities but to neutralize external threats.

(5) The aspect of the relations with the other patents that the enterprise already has

Table 6 shows results of the evaluation of patents from aspect of the relations with the other patents the enterprise already has. Opinions were divided at the question of “the residual period of other patent rights (Q21)” and “the number

of other patent rights (Q22)”. The ratios that enterprises agreed to each question were 49.5% and 41.9%. In the question of “the right contents of other patent rights (Q23)”, 65.3% of enterprises agreed. The enterprises make much of quality than the number of patents and the residual period. And it tends to decide the defensive patent by comparing the patent with the other patents that the enterprises already have from the quality aspect.

C. The relation to the environment and the strategy

(1) The product life cycle

Table 7 shows the result of the relations with the product life cycle. 65.9% of enterprises have many defensive patents in “the introduction stage (Q24)” and 78.2% of enterprises have in “the growth stage (Q25)”. But, in the maturity stage and the decline stage, the necessity of defensive patents decreases. Only 9.1% of companies agreed about having many defensive patents in “the decline stage (Q27)”. A lot of defensive patents are required in the first half of the product life cycle that competition comes to gradually become intense.

TABLE 6: RESULTS REGARDING THE EVALUATION OF PATENTS ASPECT OF THE RELATIONS WITH THE PATENT THAT THE ENTERPRISE ALREADY HAS

Question	4	3	2	1	RA
Q21: We consider the residual period of other patent rights when we decide to maintain the patent as the defensive patent.	4.2%	45.3%	34.7%	15.8%	49.5%
Q22: We consider the number of other patent rights when we decide to maintain the patent as the defensive patent.	3.2%	38.7%	41.9%	16.1%	41.9%
Q23: We consider the right contents of other patent rights when we decide to maintain the patent as the defensive patent.	4.2%	61.1%	25.3%	9.5%	65.3%

4: Fully Agree, 3 Agree, 2: Disagree, 1: Fully Disagree, RA: Ratio of Agreement

TABLE 7: RESULTS REGARDING THE RELATIONS WITH THE PRODUCT LIFE CYCLE

Question	4	3	2	1	RA
Q24: We have many defensive patents when the market is the introduction stage.	14.8%	51.1%	31.8%	2.3%	65.9%
Q25: We have many defensive patents when the market is the growth stage.	15.2%	63.0%	19.6%	2.2%	78.2%
Q26: We have many defensive patents when the market is the maturity stage.	8.5%	38.3%	52.1%	1.1%	46.8%
Q27: We have many defensive patents when the market is the decline stage.	1.1%	8.0%	68.2%	22.7%	9.1%

4: Fully Agree, 3 Agree, 2: Disagree, 1: Fully Disagree, RA: Ratio of Agreement

(2) The 5 forces analysis

Table 8 shows results regarding the relations with the 5 forces analysis. The difference in each player appeared clearly. Japanese enterprises consider the defensive patent is a way to have the superiority for “competitor (Q28)”, “new entrants (Q31)” and “substitutes (Q32)”. More than 80% of enterprises consider these players when the enterprises decide to have defensive patents. On the other hand, enterprises consider “buyer (Q29)” and “new entrants (Q30)” are each 30.5% and 19.2%. Japanese enterprises have defensive patents to keep superiority for the wide range of competitors which are not only the conventional competitors but also new entrants and substitutes.

(3) The competitive positions

Table 9 shows results of the relations with the competitive positions. 87.0% of enterprises answered we have many defensive patents at the position of “the leader (Q33)”. On the other hand, many enterprises don’t need many defensive patents at position of “the follower (Q36)”. Opinions are divided at position of “the challenger (Q34)” and “the niche player (Q35)”.

A strategy of the companies at the positions of the leaders is to continue maintaining the position. Therefore it is considered that the defensive patent is for the maintenance of the position. On the other hand, the enterprise at the position of the follower makes much of the imitation and the cost cut strategy mainly. Such enterprises don’t develop an original technology so much and rarely demand the protection by the patent. These enterprises think that it becomes the cost to maintain patents. Therefore the follower doesn’t need the defensive patent.

(4) The three generic strategies

Table 10 shows results regarding the relations with the three generic strategies. 82.8% and 85.1% of enterprises answered defensive patents are necessary for the enterprises which use “the differentiation strategy (Q38)” and “the segmentation strategy (Q39)”.

These strategies are concentration to the specific technology and market. These results indicate whether the enterprise have the defensive patent depend on the intensive degree to a technique and the market.

TABLE 8: RESULTS REGARDING THE RELATIONS WITH THE 5 FORCES ANALYSIS

Question	4	3	2	1	RA
Q28: We consider the defensive patent is a way to have the superiority for competition.	23.4%	63.8%	11.7%	1.1%	87.2%
Q29: We consider the defensive patent is a way to have the superiority for buyer.	4.2%	26.3%	53.7%	15.8%	30.5%
Q30: We consider the defensive patent is a way to have the superiority for supplier.	1.1%	18.1%	62.8%	18.1%	19.2%
Q31: We consider the defensive patent is a way to have the superiority for new entrants.	30.5%	53.7%	15.8%	0.0%	84.2%
Q32: We consider the defensive patent is a way to have the superiority for substitutes.	18.1%	68.1%	13.8%	0.0%	86.2%

4: Fully Agree, 3 Agree, 2: Disagree, 1: Fully Disagree, RA: Ratio of Agreement

TABLE 9: RESULTS REGARDING THE RELATIONS WITH THE COMPETITIVE POSITIONS

Question	4	3	2	1	RA
Q33: We have many defensive patents when the position of our business is a leader.	28.2%	58.8%	12.9%	0.0%	87.0%
Q34: We have many defensive patents when the position of our business is a challenger.	9.1%	39.8%	46.6%	4.5%	48.9%
Q35: We have many defensive patents when the position of our business is a niche player.	6.4%	47.4%	42.3%	3.8%	53.8%
Q36: We have many defensive patents when the position of our business is a follower.	5.0%	23.8%	63.8%	7.5%	28.8%

4: Fully Agree, 3 Agree, 2: Disagree, 1: Fully Disagree, RA: Ratio of Agreement

TABLE 10: RESULTS REGARDING THE RELATIONS WITH THE THREE GENERIC STRATEGIES

Question	4	3	2	1	RA
Q37: We have many defensive patents when we use the cost leadership strategy.	3.4%	36.0%	58.4%	2.2%	39.4%
Q38: We have many defensive patents when we use the differentiation strategy.	25.8%	57.0%	15.1%	2.2%	82.8%
Q39: We have many defensive patents when we use the segmentation strategy.	23.0%	62.1%	13.8%	1.1%	85.1%

4: Fully Agree, 3 Agree, 2: Disagree, 1: Fully Disagree, RA: Ratio of Agreement

Opinions were divided whether the enterprise which use “the cost leadership strategy (Q37)” have many defensive patents. The enterprise must pay annual fee to keep the patent. For the enterprise with the cost leadership strategy that win competition by realizing lower cost than other companies, the annual fee of the patent is recognized as cost and it obstructs the strategic realization.

V. DISCUSSION

In this section we discuss the defensive patent that Japanese enterprises recognize from results of our survey in this research. By unifying results, four reasons why Japanese enterprises have patents from defensive point of view are shown.

A. To maintain the superiority in the major technology

The major technology is the technology to realize and improve the basic performance of the product. And it's also the technology that many enterprises develop. Many enterprises agreed that the defensive patent is necessary in the growth stage in the survey. The focus of the development of products in the growth stage is usually improvement of the technology about the basic performance of the product [15]. Therefore the defensive patents relates to the improvement of the major technology.

In addition, rarity is not necessarily for the defensive patents. This shows that technology area of the defensive patents is that other companies also make research and development. Furthermore, many enterprises consider that it is necessary that defensive patents correspond to the organizational ability.

From these, Japanese enterprises have the defensive patents about the major technology that the other enterprises may make research and develop, and prevent the other companies to carry out the technology. So, one of the purposes of the defensive patents is to maintain the superiority in the major technology in the period of market growth.

B. To continue the sustainable business in the future

Research and development to the future market are necessary for the enterprises to continue to grow the business. But it is difficult to predict the trend of the market. Many Japanese enterprises consider the defensive patent have the possibility of use and long residual period of the right. The other enterprises may carry out the technology that the enterprises plan to use it in the future. This is because the other enterprises may have same thought of the enterprise. Therefore Japanese enterprises have such a future technology as the defensive patent and prevent other enterprises to use. So, Japanese enterprises keep superiority of technology for the future.

Decision about the possibility to use the patent having a long residual time is difficult. The enterprises keep having such a patent to deal with future uncertainty. Furthermore,

Japanese enterprises have defensive patents to oppose to new entrants and substitutes. The results indicate that Japanese enterprises intend to maintain the share of market and the position for a longer time. So, one of the purposes of the defensive patent is to continue the sustainable business in the future.

C. To keep the market position, market share and technological superiority

The enterprise which is at the position of the leader uses the strategy to keep the position. The enterprise using the segmentation strategy demands the superiority in the market. The enterprise using the differentiation strategy demands the technology to realize the strategy and keep the superiority as a one of means.

In the survey, the enterprises consider that the defensive patent is necessary when the enterprise is at the position of the leader and user of the segmentation strategy and the differentiation strategy. These indicate that the position, the market, and the technology are clear, the defensive patent becomes necessary. When the intensive degree to keep the specific position, markets, sororities by technologies, the enterprises have many defensive patents to maintain it. So, one of the purposes of the defensive patent is to keep the market position, market share and technological superiority.

D. To give pressures to competitors

If the patent right is used in law suit for other enterprises, it is desirable that the patents have wide range of right, difficulty of evasion and easiness to find infringement. But so many enterprises don't consider that the defensive patent have defects. In the law suit, the right with defects is usually instituted as a problem [16]. This fact indicates Japanese enterprises don't think the defensive patent is used for the law suit of infringement. So, one of the purposes of the defensive patent is to give pressures to competitors by having defensive patents.

VI. CONCLUSION

The half of Japanese patents is not used. And about 60% of unused patents are considered as “defensive patents”. From our questionnaire survey for Japanese enterprises which have high number of patents, about 90% of enterprises think that defensive patents are necessary. This shows the way of thinking that the defensive patents can be utilized as defending tools against competitors has been well penetrated to most of Japanese enterprises. But the enterprises cannot control defensive patents enough. This is because defensive patents are conceptual and the definitions are not clarified.

So, we investigate about defensive patents from two aspects which are the evaluation of the patent and the relation to the environment and the strategy by questionnaire survey. And we clarify the defensive patent from the common items and comparing answers of the questionnaire.

It is clarified that the patent selected as defensive patent

have mainly eight features. These are alternative technology for the enterprise technology, higher effect, long residual period, wide area of the right range, difficulty of evasion, easiness to find infringement, possibility to use in the future, and capability to exploit opportunities or neutralize external threats. More than 2/3 of enterprises agreed these features as defensive patents.

In addition, it is thought that many defensive patents are necessary when the market is in the growth stage and the enterprise is in the position of the leader and the enterprise is user of the differentiation strategy and the segmentation strategy. And the defensive patents are used to oppose competitors, new entrants and substitutes.

Because the definition of defensive patent was vague, it has been difficult for the enterprises to decide to have defensive patents. By this research, the feature of defensive patents was clarified. The enterprises can use these features as indicators when they decide which kinds of patents they should have. And the management of patents from the defensive point of view became easier. Furthermore, it is necessary for the enterprises to keep managing patents according to the features of the defensive patents from the aspect of the evaluation of patents and the relation to the environment and the strategy.

Four reasons why Japanese enterprises have defensive patents are also shown. These are to maintain the superiority in their major technologies, to continue their sustainable business in the future, to keep the market position, market share and technological superiority, and to give pressures to competitors by having defensive patents.

We have three future tasks. The first is to investigate the difference in the defensive patent and other patent objectively by using the numerical value. The

second is to investigate the difference between Japanese and other country's enterprises about defensive patents. The third is to investigate the relations between the factors as defensive patents extracted in this study and its contribution to the management of the enterprise.

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