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How can we predict the new products and services by using the trademark information and the patent information?

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Abstract-- The purpose of this research is to examine the new product prediction by using the trademark information and the patent information. We have focused on the adding goods and services, and the suggestive trademark. The additional goods and services are added by the applicant. The additional goods and services are expected to include the information about the type of the new product. The suggestive trademark is expected to contain the information about function and effect of the new product. We analyzed the additional goods and services, and the suggestive trademark. As a result, it was found that the information useful in new product predicted can be extracted from the trademark information. In addition, we examined how to search for patents related to new products by using the trademark information. The information extracted from the trademark information can be expected to be utilized as a keyword. Furthermore, designated goods and services were found to be converted to IPC information. Consequently, it was found that keyword and IPC search using the information extracted from the trademark information is possible. By using the trademark information and patent information, it is expected that it is possible to highly accurate new products prediction.

1. Introduction and Purpose of this research

For companies, intellectual property is an important management resource. Companies acquire the intellectual property rights in order to protect their products and services. In particular, patent rights and trademark rights is important. In business activities, the acquisition of patent rights and trademark rights is required.

Patent right is the right to protect the invention. Patent right is acquired in order to protect the technical aspects of the business. To acquire patent right, it is necessary to submit a patent application. The specification including the description of the invention is attached to the patent application. Each time the good invention is created, the patent application is submitted. A plural number and sometimes a large number of patent applications are submitted to protect one new product and service. The patent application is submitted prior to the planning of new product and service.

Trademark right is the right to protect the brand name and product name. Trademark right is acquired in order to protect the brand and the trust in the business. To acquire trademark right, it is necessary to submit a trademark application including

the information of the trademark and the designated goods and services. Typically, the trademark application is to be submitted to from after a series of patent application has been filed until the launch of new products and services.

The patent applications and the trademark applications are published after a certain period of time. The patent applications and the trademark applications contain the technical information and business information. The patent information and the trademark information has been published is available for analysis and future predictions of the trends of each industry and each company.

The study of the patent search [1] [2] [3] and use of patent information has progressed. For example, Japan Patent Office is doing a technology trend survey using the patent information in many technical fields [4]. In addition, companies, by creating a patent map using the patent information, perform business analysis and new product prediction of competitors. Since the invention (technology) advances cumulatively, it is expected that the relationship between applications is found in a particular technical field by using the patent information. The patent information is effectively available to grasp the technology trends. Therefore, the patent information is well utilized. However, the number of patent applications in each company is enormous, and which invention is utilized for the new product is unknown. In addition, the patented invention is superior technically, not superior technology is always commercialization. In addition, the period from the patent application until the new product launch is long in many cases. Therefore, in order to predict the new product by utilizing patent information, long-term information collection and analysis is required.

In contrast, use of the trademark information is felt to be insufficient compared to the use of the patent information. Although analysis of the behavior and strategies in accordance with the trademark in each companies based on the interviews have been carried out, the analysis using published trademark information [5] is less. Because trademark is the selection, there is less aspect that cumulative progress. Therefore, to find a relationship between applications based on the trademark information is difficult.

Here, utilization of trademark rights is higher than the utilization of patent rights [6]. The relationship between the trademark and the business is considered to be strong. In addition, the trademark information is the information that indicates the study results for the new products by the department in charge of the business [7] [8]. Therefore the trademark information is also the prior information about new products and new services for the near future market. In addition, the trademark information includes the information about marketing and the brand. In other words, it can be said that the trademark information is useful to predict the business activities of each company. In particular, the trademark information is said to be useful in order to predict the new products and services. In addition, the trademark application is filed before a certain period of time in which new products are on the market. The period from the patent application until the new product launch is long. In some cases, that period is more than 10 years. In contrast, the period from the trademark application until the new product launch is within about a few months to a few years.

Being able to predict the new products using the trademark information, it is possible to predict the new product in a suitable timing with high efficiency.

However, the amount of information contained in the trademark information is limited. The information that will help in the prediction of new products that can be extracted from the trademark information is limited. This information is limited to the characteristic effects and concepts like. Therefore, it is considered to be difficult to extract detailed information about the specifications and the detailed functions of the new products from the trademark information. Here, a series of patent applications relating to new products have been submitted before the trademark application. It is possible to use the patent information when using the trademark information. The information extracted from the trademark information is sufficiently useful. However, further, if it is possible to obtain the patent information relating to new products by using the trademark information, it is possible to predict the specifications and the detailed features of the new products.

The purpose of this research is to examine the new product prediction by using the trademark information and the patent information. Specifically, the purpose of this research is to examine the new product prediction by extracting the information about the new products and services from the trademark information, and obtaining the patent information relating to the new products and services by using the said extracted information from the trademark information.

2. Methodology

The following case study has been carried out. "Kao Corporation" has been selected as the target company. The trademark information of "Kao Corporation" was searched and analyzed. The information about the designated goods and services and the trademark was analyzed respectively. Furthermore, it was examined how to find patents related to new products and services based on the information extracted from the trademark information.

2.1 Analysis of the trademark information

We chose "Kao Corporation " which was a Japanese chemistry manufacturer as the target manufacturer for the case study, from the companies chosen as 30 global companies in the report " Trademark application Survey Report (Overview), Survey on the application and use of the trademark that focuses on brand building of the company, FY2011 (Japan Patent Office)".

We acquired the information about the trademark application, which was filed in 2008 to 2012 by Kao. And, we have attempted to extract the information about the new products and services from the acquired trademark information. Further, the designated goods or services and the trademark were analyzed in the following point of view.

2.1.1 Trademark search

The search condition is as follows.

DB : IPDL (now J-PlatPat), Japanese Trademark Database

Search service : trademark application and registration information

Search Date : 2014.6.30

Retrieval item "Applicant / Holder " = Kao? & “Appl date / Reclassication date / Int reg date : desig date” = 2008.01.01 - 2012.12.31

As a result of the above-mentioned search, the number of the trademark applications in Kao from 2008 through 2012 for 5 years was 1,906. As for the number of the trademark applications of Kao every each year from 2008 through 2012 was 617 in 2008, 438 in 2009, 347 in 2010, 220 in 2011, and 284 in 2012.

2.1.2 Designated goods and services analysis

Usually, the designated goods and services are selected from the top-level designated goods and services in the list that Patent Office has provided. If necessary, the applicants are filing the goods and services of the middle-level and low-level category as the designated goods or services. In addition, the applicants are filing the new designated goods or services that are not included in the list. The additional goods and services are added goods and services by the applicant for new products and services. The additional goods and services are expected to include the information about the type of new products. We have analyzed as follows focusing on the additional designated goods and services.

The additional designated goods and services are the goods and services that have not been listed as the top level goods and services in the classification table (list) that is provided by the Japan Patent Office (JPO). As shown in FIG. 1, the additional designated goods and services are the goods and services that are listed as medium or lower level goods and services in the classification table of the above-mentioned, and the goods and services that are not listed in the classification table and ware added by the applicant. By practice request, the applicant describes the goods and services that trademarks are actually used as the designated goods and services. In other words, the additional goods and services are the goods and services that the applicant wants to use in particular. By extracting the additional designated goods or services, it is expected that the extracted information suggests the type of the new products.

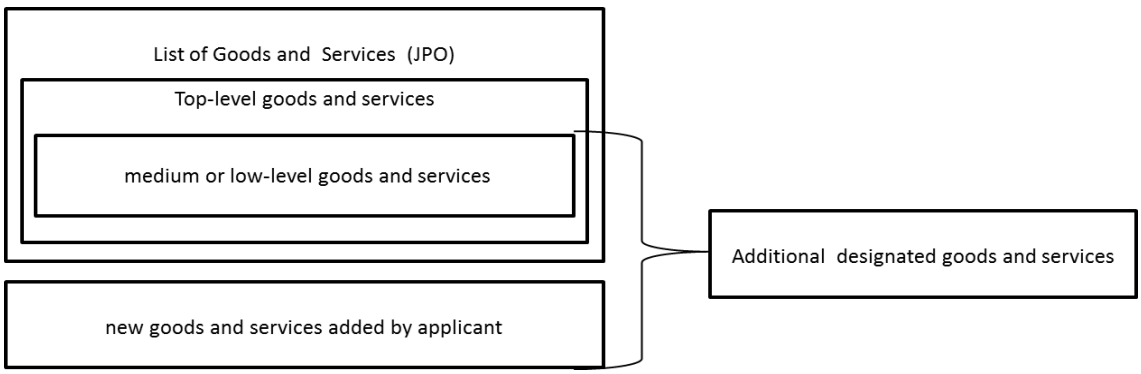


FIG. 1 Additional designated goods and services

2.1.3 Trademark analysis

There are the non-suggestive trademark including fanciful trademark and the suggestive-trademark. We expected to be able to predict the function and use of new products from the suggestive trademarks. We have analyzed as follows focusing on suggestive trademarks.

We classified trademarks applied for in 2012 in the suggestive trademark and non-suggestive trademark. In this research, as shown in FIG. 2, the suggestive trademark is the trademark suggesting function, use, effect, target, constitution, and field. The non-suggestive trademark is the trademark except the suggestive trademark, such as fanciful trademark. In this research, the trademarks which simply suggested a thing of good quality and some kind of images were classified in the non-suggestive trademark. These classified suggestive trademarks were named suggestive trademark ① to distinguish it from the trademark including the following brand name (suggestive trademark ②). It is expected that the information about the new products is extracted from suggestive trademark ① directly.

Here, there are many trademarks that include the brand names. These typical trademarks are the trademarks that consist of brand name and pet name. Such trademarks are not the trademarks that suggest the functions and uses. However, it may be possible to predict the characteristics of the new products from the brand name. For that reason, the trademarks including the brand name that have been classified as non-suggestion trademarks are classified as suggestive trademarks ②.

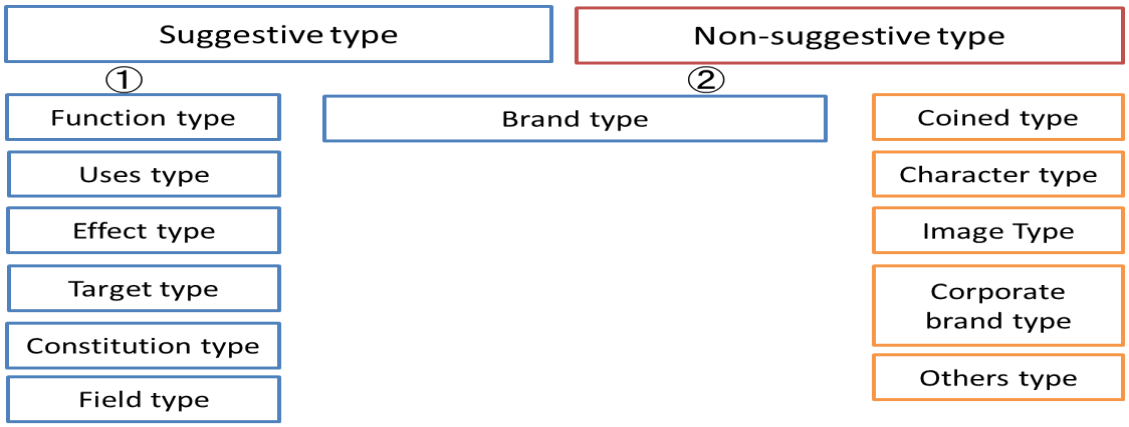


FIG. 2 Suggestive type and Non-suggestive type

2.2 Patent search by using the trademark information

The information extracted from the trademark information in an above-mentioned viewpoint is the information that is significant to predict the features and advantages of the new products. It is thought that we can predict the characteristic of the new products from the information of the additional designated goods and services, and the information of the suggestive trademark directly. However, the amount of information included in the trademark information is limited. Therefore

the information that can be extracted has a limit. It is difficult to extract the information about the details of the new product configuration and function. The series of patent applications relating to new products have been submitted before the trademark application. It is possible to use the patent information when using the trademark information. The following is expected.

(1) It is thought that we can predict the details such as constitution and the function of the new products, if we can search the patent information about the new products by using the information extracted from the trademark information as key information in the patent search.

(2) Furthermore, even if the information about the new products is not directly extracted, if it is possible to obtain the key information available from the trademark information in the patent search, it can be expected that we can obtain more detailed information about the new products. For that reason, in this research, the designated goods or services information is examined whether it can be converted to the IPC information.

3. Results and Observation

3.1 Designated goods and services analysis

As shown in FIG. 3, the ratio of additional designated goods and services in all designated goods and services type is 52.2 to 75.0%. The designated goods and services of 52.2 to 75.0 % of all the designated goods and services is, the medium and low level goods and services in the list of JPO, the new goods and services that are not listed in the list, and new goods and services that include some descriptions of the function, and the like.

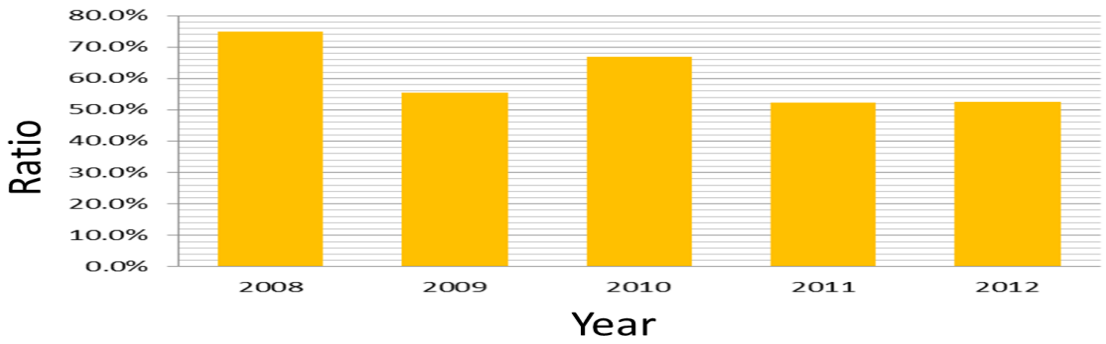


Fig. 3 ratio of additional designated goods and services

In Table 1, the classification result in the additional designated goods and services is shown. The additional designated goods and services were classified in medium-level goods and services, low-level goods and services, new goods and services that are not listed in the classification table, and new goods and services that contain the description of the function and the like. The classification results are as follows. The medium-level goods and services is 6.70%, the low-level goods and services is 8.21%, the new goods and services not listed in the list is 30.89%, and the new goods and

services including the description of functions and like is 54.21%.

Table 1 Classification of the additional designated goods and services

	Medium	Low	New	New (including description)
Number	31	38	143	251
Ratio	6.70%	8.21%	30.89%	54.21%

Table 2 illustrates the example of the additional designated goods and services. The medium and low-level goods and services are more specific than top-level goods. It is expected that the information suggesting the type of the new products is extracted from the medium and low-level goods and services. As shown in Table 2, “dressing” that is a medium-level designated goods and “lip rouge” that is a low-level designated goods show the type of new products more specifically. From the new goods and the new goods including the description, it is expected that we can extract the information about the characteristics such as functions in addition to the information suggesting the type of the new products. As shown in Table 2, for example, from "spray-type indoor deodorant" that is new designated goods, it can be extracted be spray type deodorant and is for indoor use. In addition, from "supplement containing collagen and the amino acid" that is new designated goods including description, it can be easily extracted be a supplement containing collagen and amino acids.

In this case, the ratio of the new goods and the new goods including a description of the functions and the like, is high, with respect to “Kao Corporation“, it is expected that the information about the new products from the additional designated goods and services is a lot.

Table 2 Examples of additional designated goods and services

medium	Dressing (top-level ″condiment″)
low	Lip rouge (top-level ″cosmetic″, Middle-levl ″Rouge″)
new	Spray-type indoor deodorant, Face powder
new (including description)	Supplement containing collagen and the amino acid, Cosmetics having the fragrance of the mimosa

3.2 Trademark analysis

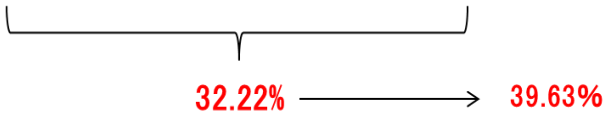
Further, table 3 shows the results of classification in suggestive type and non-suggestive type trademark in 2012. The ratio of suggestive type (①) is 32.22%, the ratio of non-suggestive type is 67.78%. In Suggestive type (①), the function type is 19.63%, the application type is 4.81%, the effect type 1.11% subject type 0.37%, configuration type is 6.3%, the field type is 0%. In Non-suggestive type, the coined type is 5.56%, the character type is 1.85%, the image type is 55.56%, the corporate brand type is 4.07%, and the other type is 0.74%.

Here, suggests type ② is 7.41%. Total of the suggestive type ① and the

suggestion type ② is 39.63%. In other words, we can extract some kind of information about the new products from approximately 40% of all trademarks.

Table 3 Classification of the trademark of 2012

Type	Suggestive①						Suggestive②	Non-suggestive				
	Function	Uses	Effect	Target	Constitution	Field	Brand	Coined	Character	Image	Corporate brand	Others
%	19.63	4.81	1.11	0.37	6.30	0	(7.41%)	5.56	1.85	55.56	4.07	0.74



32.22% → 39.63%

Table 4 illustrates the example of the suggestive trademark. For example, from "MELANO GUARD" that is function-type, it can be predicted melanin guard and sunburn prevention function. From "mitamama okudake" that is use-type, it can be predicted to be an element to put in accordance with the display. From "SOFINA / uruoi gungun" that is effect-type, it can be predicted that there is the effect of moisture to penetrate steadily. From "suimin nanmin" that is target-type, it can be predicted that people who want to get a good sleep is the target. From "yoru colla" that is constitution-type, it can be predicted to be product that contain collagen for use at night. As described above, from the suggestive trademarks, it is possible to extract the information such as the function and effect of the new products.

Table 4 Examples of suggestive trademark

function	MELANO GUARD
use	mitamama okudake (Only put in as seen)
effect	SOFINA＼uruoi gungun (Moisture penetrates steadily)
target	suimin nannin (People who suffer from sleep)
constitution	yoru colla (Night collagen)

3.3 Use of the patent information

As described above, the series of patent applications relating to new products have been submitted before the trademark application. It is possible to use the patent information when using the trademark information. Successively, we examine the method to search the patent information about the new products and services by using the information extracted from trademark information as key information. In addition, about the trademark information that the information about the new products and services is not extracted directly, we examine the method to obtain the key information available in the patent search. In this research, we consider whether we can convert designated goods and services into IPC (International Patent Classification) information.

3.3.1 Use of the extracted information

As described above, the additional goods and services information includes the information suggesting the goods type and the characteristic. The information can be used as a keyword in the patent search.

The information extracted from a trademark classified in suggestive trademark ① includes the information of function, use, effect, target person, constitution and field of the new products and services. The information is available as a keyword in the patent search.

The information extracted from the trademark classified in suggestive trademark ② includes the information of characteristic, function, the concept of the existing brand line. The information is not information suggesting the functions of the new products and services directly, but it is the information suggesting the characteristic of the brand. Thus, the information is available as a keyword in the patent search.

From the above, the information of the additional designated goods and services extracted from the designated goods and services, and the information of the suggestive trademark extracted from the trademark information is available as the keywords in the patent search. By the patent search using the extracted information, we can obtain the patent information about the new products and services. It is expected that we can obtain the further detailed information about the new products and services.

3.3.2 Converting the designated goods or services to the IPC Information

About the trademark information that the information about the new products and services is not extracted directly, we examine the method to get the key information available for the patent search. In this research, we consider whether we can convert the designated goods and services into IPC information. If we can convert the designated goods and services to the IPC information, we can search for the patent information related to the new products and services, even if we could not extract the additional designated goods and services and suggestive trademark. Further, with respect to the trademarks that the information can be extracted, by further utilizing the converted information, it is expected to improve the accuracy of the patent search.

Here, we have searched for IPC corresponding to a plurality of the designated goods or services. As a result, as illustrated in Table 5, it was confirmed that the IPC corresponding to the designated goods or services exists. In other words, the ability to convert the designated goods or services to the IPC is confirmed.

Table 5　IPC that corresponds to the designated goods or services

class	designated goods and services	IPC		
3	soap products	C11D		
3	false nails	A45D		
3	eyelashes	A41G	A61Q	C09J
3	cosmetics	A61K	A61Q	
3	lipstick	A61K	A61Q	
3	perfumes	C11B		
3	toothpaste	A61K	A61Q	
3	seaweed gelatin	C11D		
3	softeners	D06M		
3	bleaching preparations	C11D	D61L	D61M
3	skin serums	A61K	A61Q	
5	supplements	A61K	A61P	A23L
5	masks	A62B		
5	diapers	A61F		
16	paper towels	A61Q		
16	diapers	A61F		
21	dental flossers	A61C		
30	tea	A23F		
32	beverages	A23L		
32	whey-based beverages	A23L	A23G	

3.3.3 New product prediction method by using the trademark information and the patent information

FIG. 4 shows the summarized new products prediction method by using the trademark information and the patent information that is discussed above. As shown in FIG. 4, the additional goods and services information or the suggestive trademark information (extracted information) can not only be utilized to predict directly new products, but also, for example, is available for the patent search as the keywords.

Further, with regard the trademark information described above is not extracted, to convert the designated goods or services information to the IPC information allows the patent search using the conversion information.

From the above, by using the trademark information, it is possible to search for the patent information related to new products. By this method, it is possible to obtain the detailed information about new products, and accuracy of this new product prediction is expected to be improved.

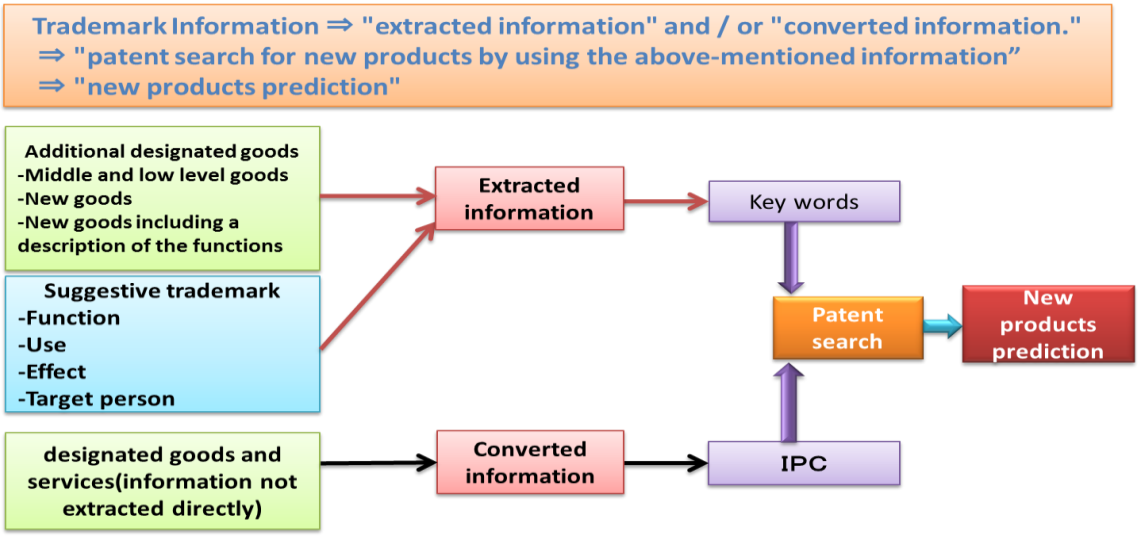


Fig. 4　How to search for patents related to the new products by using the trademark information

3.4 Example of the procedure of the new product prediction

3.4.1 Timing of the new product prediction

As shown in FIG. 5, new product prediction is carried out until the new product launch from the trademark application. The prediction based on the trademark information and the prediction based on the patent information provided by a patent search using trademark information, are possible.

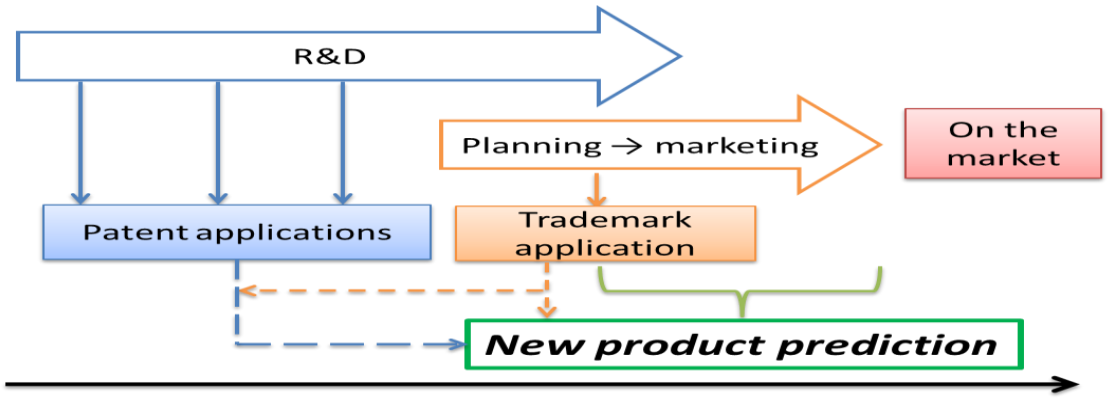


FIG. 5 Timing of the new product prediction

3.4.2 Procedure of the new product prediction

The procedure of new products prediction is shown in FIG. 6. As shown in FIG. 6, first, we extract the additional designated goods and services from designated goods and services. We extract the information about the new products from the extracted additional designated goods and services. For example, the information about the type of new product is extracted.

Then, if the trademark is a suggestive trademark, we extract the information about the new product from the suggestive trademark. For example, the information about the function, use, target person, effect and constitution related the new product is extracted.

If the obtained information is enough, we predict a new product based on the information. If the obtained information is not enough, we search for the patents related to new product by utilizing the information.

The information extracted from the additional designated goods and services, and the suggestive trademark is used as a patent search keyword. In addition, by converting the designated goods and services in IPC, it is possible to patent search based on the IPC. Then, on the basis of patent information, detailed information about the new products and services can be acquired. And, we predict the new product in detail on the basis of the information.

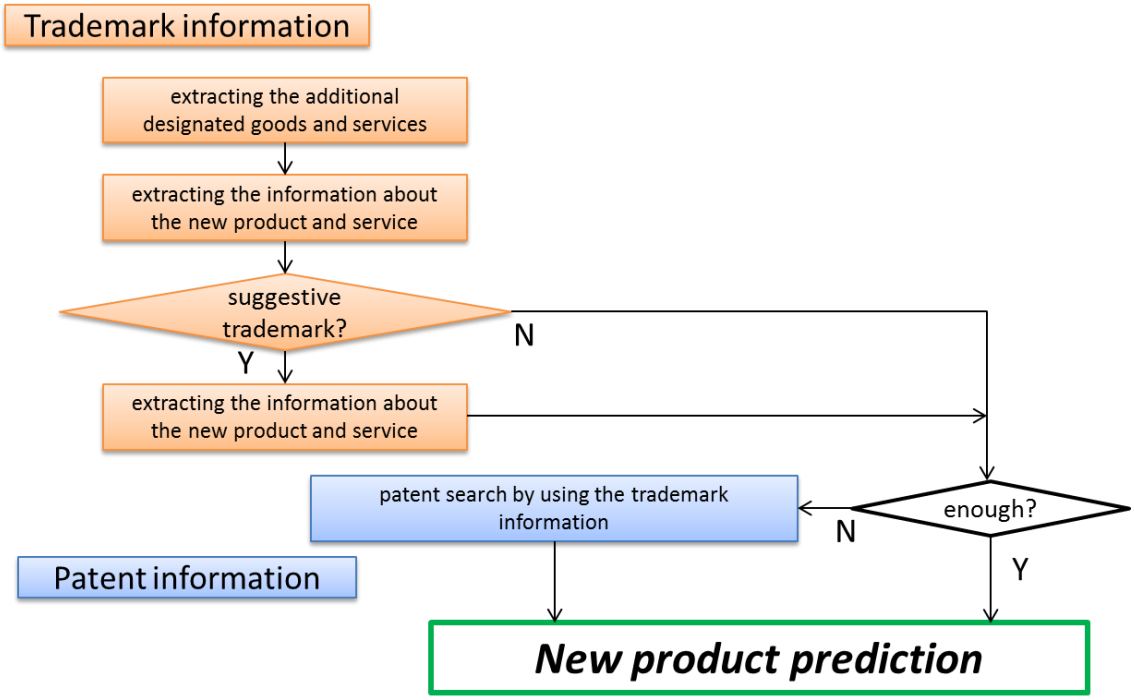


FIG.6 Procedure of the new product prediction

4. Expected effect

4.1 Reduction of the research work

The prediction method is to utilize the information from the trademark having a strong association with the new products, has high prediction accuracy. And, in this prediction method, since the patent search using the trademark information having a strong association with this new product, it can also reduce the work of the patent search. For example, if the new products prediction is to use only the patent information, it is necessary to search for the patent information repeatedly by experts and classify the enormous patent publication for each technical field (see Figure 7). In contrast, in the prediction method of the research, by searching the patent information relating to new products that are marketed after a period of time by using the information extracted and converted from the trademark information, new products prediction of high certainty is possible in less work (see Fig. 8). When the traditional method is patent push method, the method of this research is a trademark pull method.

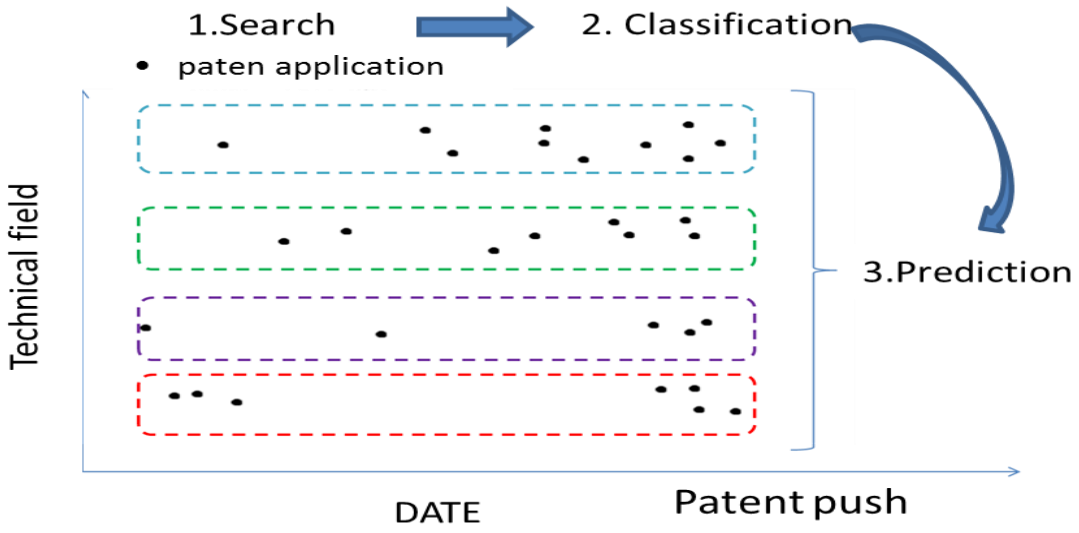


FIG.7 New products prediction using only the patent information

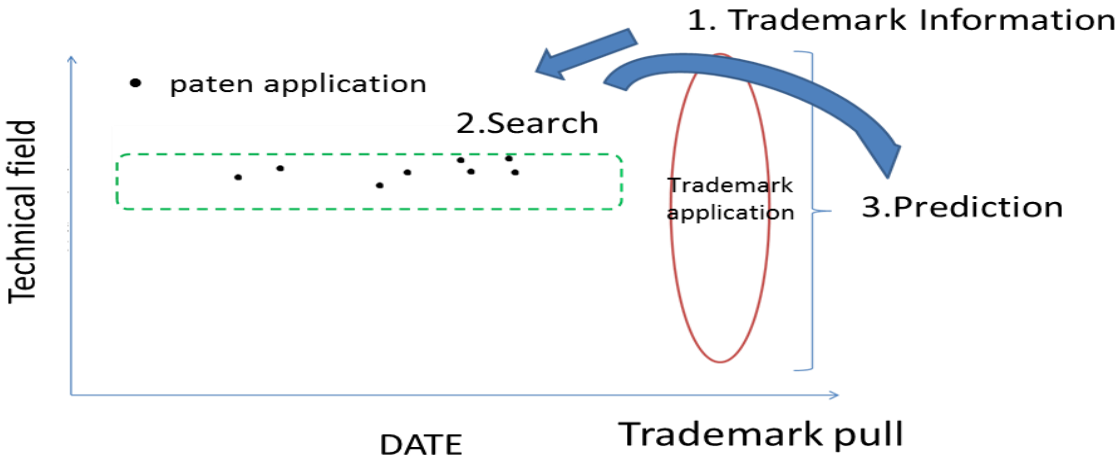


FIG.8 New products prediction using the trademark information and the patent information

4.2 Preparation of countermeasures

By predicting the new products of competitors, it is possible to study the pre-countermeasures. The prediction method is expected to be significant in business activities. If it is possible to predict in advance the new products of competitors, the company is able to market similar products and inexpensive products before and, it is possible to develop some counter products.

4.3 Use to earnings forecast

By predicting the new products to be launched in the near future by this prediction method, if we can predict the sales of new products in advance, it is expected to help in earnings forecast of the company. The sales forecasts using the new products prediction information if it is possible, it is useful to earnings forecast of the company.

For example, by combining the known products sales prediction method, it is expected that the system capable of earnings forecast when the trademark information is obtained will be developed.

4.4 Incorporation of search in other countries

Even if this new products prediction method is not valid in the country, it is expected to be able to predict the new products in the country by incorporating the search results in other countries. In particular, it is expected to be able to extract the information that can be used in new products prediction from the trademark information in the home country of the company.

5. Conclusion

From the above, we propose the method for predicting the new products using the trademark information. In particular, we propose the method for predicting the new products by using the trademark information and the patent information.

First, in this research, by extracting the information about the additional designated goods or services from the trademark information, it is found that the information about the new products can be obtained. Further, by extracting the information about the suggestive trademark from the trademark information, it is found that the information about the new products can be obtained. Furthermore, the extracted information has been found to be available for the patent search, for example, as a keyword. By using the extracted information in the patent search, it is found that it is possible to obtain the detailed information about the new products.

Then, it is found that it is possible to convert the designated goods or services information to the IPC information. Even in the case where the extracted information to be used in new products prediction could not be obtained, it is found that it is possible to obtain the patent information about new products by utilizing IPC information that is converted information. Even if it is not possible to obtain directly the new products information from the trademark information, it is found that the detailed information about the new products can be obtained by the patent search using converted information such as the IPC information described above.

From the above, according to this research, by the patent search by using the extracted information and / or converted information obtained from the trademark information, it is expected that we obtain the patent information containing detailed information about the new products. According to the prediction method of this research, it is found that we efficiently obtain the information about the new products.

However, the use of this new products prediction method has to be considered by a further case study in which field whether it is effective.

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