

A Study of Patent Acquisition and Resolution Strategies on Patent Disputes

Dong Hyun Lim¹, Bit Na Yun¹, Eun Mi Park² and Seong Taek Park^{3*}

¹Department of Business Administration, Korea National University of Transportation, Korea;
idh9036@nate.com, youn1521@naver.com

²Department of Business Administration, Kyungpook National University, Korea;
issack38317@naver.com

³Department of Management Information Systems, Chungbuk National University, Korea;
solpherd@cbnu.ac.kr

Abstract

As globalization is accelerating, companies are making great efforts to grow. Thus, many companies are trying to make innovations, and their interest in patent, the result of innovations, is also increasing. Thus, this study tried to examine cases that companies registered study results from innovations as patents, and activities that they are doing with obtained patents. And because when patent disputes occur, companies come to devise various measures, this study tried to examine those measures through an empirical analysis. As a result of the analysis, activities performed with obtained patents turned out to be patent barrier establishment, manufacturing, cross licensing, technology transfer, and royalties through licenses, in order. Coping measures in case of patent litigation turned out to be a counter-suit, patent invalidation suit, cross licensing, suit through solidarity with other firms, and patent right fee payment, in order.

Keywords: Patent, Patent Activities, Patent Litigation, Strategy to deal with Patent Litigation

1. Introduction

Recently in the global market, firms are at a fierce war using their patents as a weapon. As a result, recognition has been increasingly spread that the firms holding many essential patents or strong patents in certain areas are advantageous to ensure the market initiative and unique position in the market. Especially the firms in the ICT industry related to high-tech recognize patents as the most important tool in their business, as the ICT industry shows a higher rate of innovation in technology and creates higher effects of revenue, compared to other industries.

Since patents became important from a business point of view, unlike the past, firms started making out various strategies for strong patents. They have been making lots of efforts about measures to secure a return on their R&D investment while taking into account their strategic direction, business strategy, product strategy, portfolio

strategy, etc. from their R&D stage. These efforts are called an appropriability mechanism. The appropriability mechanism includes a variety of mechanisms, such as patents, trade secrets, lead times, etc. However, this study attempted to mainly deal with patents. It is because most firms are active in registering patents for the results obtained from their research and development and in having their registered patents legally protected, and patents can be a powerful weapon to allow them to secure their revenue as well.

Firms have made various efforts regarding patents. In general, patents can be utilized as an indicator to measure technology innovation capabilities and technology competitiveness in firms. Therefore, many firms increasingly tend to file a patent application for the results of their technology innovation¹. But firms' acquisition of patents for the results of their technology innovation does not mean that their patent activity is not finished. For firms, their activities even after acquiring patents can

* Author for correspondence

be more important than their efforts to acquire patents. In particular, Korea relatively lacks basic and core technology and its firms have been frequently attacked by global firms and patent trolls, so better aware of the importance of patents than anyone else¹. For that reason, firms are required to make out the proper strategies on patent acquisition.

Generally, firms' activities after patent acquisition vary, such as manufacture, income from licensing, technology transfer, building patent barriers, etc. Eventually, if firms intend to establish proper patent strategies, they must define the purpose of their patent application.

In recent years, patent disputes have become a hot issue. The number of patent disputes continues to rise around the globe. Additionally, the frequency of patent disputes and the amount of patent litigation are also on the rise.

Patent disputes are usually caused by firms' efforts to prevent the loss from occurring due to competitors' imitation of their products or services and to use their patents as a means to check latecomers. These efforts may be a kind of warning to indicate that their patent rights are under infringement. However, most of firms are not well aware of the importance of patents and patent disputes until these patent litigations or disputes actually occur. One of such examples is the recent patent dispute between Apple and Samsung. For Samsung, it had not prepared for taking precautions against patent disputes. Of course, Samsung has the patent department and personnel but seems to have been relatively insufficient in preparing for patent disputes in a strategic dimension. In the case of large companies, they have an ability to resolve patent disputes through their sufficient manpower and funds. But it is the reality that SMEs and venture companies do not find a solution at all if a patent dispute occurs. Although they have awareness of patent disputes, they lack the preparedness for responses to patent disputes.

In general, measures that firms can take when a patent dispute occurs include negotiations and litigations. Negotiations encompass cross-licensing and royalty payment; litigations cover counter-suits, litigations through solidarity with other companies, and patent invalidation proceedings. Despite the importance, however, there have been only a few researches on activities after patent acquisition and on resolution strategies on patent disputes. In addition, prior studies have looked at those activities and strategies from the

legal point of view, so a difference is made between the results of a study and the actual site.

Therefore, this paper examined activities after patent acquisition and resolution strategies on patent disputes by looking at the factors set forth in the existing previous studies and conducting a survey of experts and an empirical analysis of R&D and patent staffs. Activities after patent acquisition and resolution strategies on patent disputes presented in this study are expected to provide practical suggestions for firms to establish their patent strategies.

2. Theoretical Background

2.1 Patent Acquisition

Typically, firms acquire a patent for the results of R&D and are involved in a range of activities using the patent. The activities after patent acquisition include player, fences, cross licensing² and technology transfer, income from licensing (royalties), etc.

"Player" means producing products or providing services after patent acquisition, which is the most common approach. "Fences" refer to the patent acquisition aimed to build patent barriers. This is a method used to block competitors from entering the related market or industry. "Cross-licensing" means the patent acquisition to grant a cross – license with competitors and other firms. It is usually favored by the firms with application technology, rather than the core technology.

It is an approach to get a cross-license with a firm that came to hold the core technology through the improvement patent using the essential patent. However, this approach has a disadvantage in that cross-licensing is available only under the assumption that the firm with core technology produces products but is not usable if the firm only holds the core technology while not producing products.

In some cases, firms do not use acquired patents for producing products or providing services. For example, Qualcomm held the essential patent for CDMA but did not use the patent to produce its products, but instead ETRI in Korea commercialized it. Through this, however, Qualcomm has been earning huge profits of royalty. In addition, if a firm has obtained a patent but finds it difficult to apply the patent to the related industry, the firm usually makes the transfer of the patent to other companies/organizations/individuals.

2.2 Maintaining the Integrity of the Specifications

Resolution strategies in case of patent disputes generally include negotiations and litigations. Of course, the preparation in advance is recommended to prevent a patent dispute, but today the convergence of technologies makes it difficult to produce products using only one patent. This is supported by the recent patent disputes in the smartphone market between Apple and other competitors, such as Nokia, Motorola, HTC, Samsung, etc. Eventually, they fiercely compete to secure the dominant design.

One of negotiation strategies may be royalty, payment for using a patent. For example, Samsung, LG, and Pantech producing a CDMA mobile phone have been paying royalties for CDMA: \$ 5.25 for a domestic product, \$ 5.75 for an export product. In addition, for cross-licensing, if it is admitted to need the exchange and use of a certain patent between licensees, they will be granted a cross-license. In this case, however, only if the patents held by both have the same economic value, each patent can be used free of charge. But if does not so, the payment for the difference is made to the firm with a higher economic value of the patent and a license is granted to the same firm.

One of litigations is a counter-suit as an independent action. For instance, Apple has filed a patent lawsuit against Samsung and then Samsung has filed the counter-suit as an independent action. However, if a firm files a counter-suit as an independent action, it must have sufficient dedicated personnel (attorneys, lawyers, etc.) and funds. Since the cost of patent litigation in the United States basically reaches \$ 2,000,000, the counter-suit as an independent action requires a firm to be careful.

If a firm makes a law-suit as an independent action, the risk is greater. Thus, the second best may be the litigation through solidarity with other companies. Firms are able to solve their own problems through solidarity. This approach brings a significant effect in aspects of costs.

For example, a case of dispute, similar to the current patent litigation, occurred in the field of railway equipment and agricultural machinery in the late 19th century, when patent sharks, etc. were very active. But as railway equipment makers jointly formed solidarity, rather than agreed on the action, and began to file the lawsuit with the patent sharks, their activity gradually reduced³⁻⁵.

Additionally, ITIC (Information Technology Industry Council), a massive solidity of 32 IT companies such as Apple, Cisco, eBay, IBM, Microsoft, and Oracle, makes a joint effort to revise the elements of the current patent law, which can be used as a legal basis for patent monsters and a weapon against them.

Finally, patent invalidation proceedings are used, which are the most common and strong litigation. Ground provisions of the US patent invalidation proceedings are Article 100 (Invention Definition), Article 101 (Usability), Article 102 (Novel), Article 103 (Non-Obviousness), etc.

For example, Honeywell claimed in April 2001 that Hyosung had sold the PET yarns and treated fabrics manufactured using its patent (US Patent No. 5630976). It thus filed a lawsuit to the U.S. International Trade Commission (ITC), asking for banning those products from being imported into and sold in the United States. Hyosung actively responded to this and won the lawsuit by drawing the decision that Hyosung's polyester tire cord manufacturing technology and products did not infringe Honeywell's patents in the United State (March 2002) and that the Honeywell's patents themselves are invalid (June 2002)⁶.

2.3 Previous Studies on Resolution Strategies on Patent Disputes

Park et al.⁷ analyzed cases of domestic and foreign patent disputes and thereby conducted a study on how to enhance competitiveness and how to make business strategies in firms. In addition, in another study on corporate strategies on how to respond to patent disputes, the researchers presented 5 strategies: counter-suits, litigations through solidarity with other companies, cross-licensing and patent invalidation proceedings, and royalty payments⁸. Subsequently, they made a comparative analysis of large and small firms. Kim⁹ examined international patent trends and patent infringement types to present 4 approaches to overcome patent disputes⁹. Yalei Sun¹⁰ performed a study on cases of patent litigations in China. Takahiro Yuzuki¹¹ attempted to make a time series analysis on the hypothesis tried in the prior study in a perspective of law and economics.

Jin¹² provided the experts in industrial sites with the guidelines to respond to patent disputes through cases of actual patent disputes regarding refrigerated industry. Yun¹³ analyzed the existing state of international intellectual property disputes and presented strategies

on patent disputes, which include enhanced portfolio, cross-licensing, strategic alliances, etc. Ham¹⁴ examined the trends of the dispute over the patents in the IT field held by NPEs and thereby presented corporate resolution strategies, arguing the need for the domestic legal, institutional complement. Kim¹⁵ attempted to make an analysis on whether patent litigation experiences have an influence on whether to strategically use the experiences for future litigation or not and on how previously sued firms change their patent strategies after being sued, compared to before being sued. Chae¹⁶ analyzed the differences between the patents over which firms won and lost the lawsuit, and performed an empirical analysis by finding the factors influencing patent dispute outcomes. Subsequently, she presented the need to take the measures to prepare for international disputes by predicting the probability of winning a lawsuit through the equation to predict patent litigation and securing the strategic patents. Most of national and international studies have been conducted in the practical approach rather than in the academic approach.

3. Design and Methods

3.1 Delphi Method

The Delphi method is one of the approaches to predict the future, which is known to be used for any purpose if applied for the expert group. Typically, the Delphi method is said to be effective to close the consensus of the group on goals and objectives or behavior courses in the future. If there is no historical data or if the changes in the external factors that may occur in the future are deemed more important than those in the factors that have dominated development so far, expert opinions are almost be the only predictive data, inevitably. However, the prediction using the Delphi survey may be criticized to be an unscientific theory because of the inherent limitations of adopting a still uncertain situation to be studied.

Of course, the discussion of only the accuracy of the Delphi method itself seems to be difficult to avoid such criticism. But given that the ultimate purpose of the Delphi method is to help the current situation and the decision-making at the current moment, its significance as a prediction survey is sufficient¹⁷. This study thus attempted to use the Delphi method in order to derive the factors for patent acquisition activities and resolution

strategies on patent disputes. The derivation of the factors associated with patents requires reliable information and experiences, so the expert group with experiences in the field was analyzed and thus the Delphi method was used as a means to reflect the experts' views¹⁸.

3.2 Operational Definition

Operational definitions used in this study are as follows.

Table 1. Operational definition

Activities	Variable	Operational Definition
after Patent Acquisition	player	producing products and e providing services using acquired patents
	Fence	building patent barriers using acquired patents
	Cross Licensing	conducting mutual licensing of acquired patents
	Technology Transfer	loyalty income by licensing acquired patents to other firms
	License Revenue	transferring acquired patents to other companies or organizations and acquiring royalties

3.3 Data Collection and Analysis

The procedure for data collection and analysis is as follows: In this study, the Delphi survey was conducted of 7 experts in the field to identify the utilization and resolution strategies on patent disputes after patent acquisition, which also have been presented in previous studies. The Delphi survey was performed of the experts who are active in the relevant field: 3 patent valuation experts, 2 patent attorneys, and 2 professors.

The survey was intended for 57 respondents, including corporate R&D personnel and patent practitioners, to calculate the significance. The survey proceeded in a form of a questionnaire of visiting and interviewing the experts for January 1-30, 2014. Experts who participated in the survey consisted of those who have theoretical and practical experiences on research and development and who may affect the decision-making process Table 2. For questionnaire responses, a 5-point scale was used and divided into 5 stages from "5" meaning "very agree" to "1" indicating "do not agree at all." In addition, an analysis was made using the average in order to measure the importance of the activities after patent application and resolution strategies on patent disputes.

3.4 Characteristics of the Sample

Characteristics of the sample are as follows: A total of 57 companies were surveyed. Among them, the S/W industry accounted for 28%, followed by the electronics industry 17.5%, and the auto industry 8.8%. For the related field experience in respondents, 10–15 years accounted for 40%, followed by 5–10 years 40% and more than 15 years 20%. In the final education, 65% of respondents were BA and 35% MA or higher. In the size, large firms accounted for 25% and SMs 75%.

Table 2. Characteristics of the sample

		Frequency	Percent (%)
Career	5~10	23	40
	10~15	23	28
	15~	11	21
Education	BA	37	65
	MA	20	32
Enterprise	Large	14	25
	Small & Medium	43	75

4. Results of Study

4.1 Activities after Patent Acquisition

Activities carried out using acquired patents turned out to be building patent barriers (fences), followed by manufacture (player), cross-licensing, technology transfer, and royalty income from licensing.

The results reflect a recent trend. Recently, patent litigation has been highlighted worldwide. As a result, it was found out that firms that have suffered a patent infringement law suit tend to acquire patents by developing avoidance design or constructing a patent portfolio through the strategy to prevent the same mistake.

The 2nd activity after patent acquisition turned out to be manufacture. It is the very manufacture that firms can generally take as a strategy. This is the strategy of registering the results of R&D as a patent and producing products or providing services through the acquired patent. In the chemical industry, pharmaceutical industry, and biotechnology industry, manufacture turned out to be the 1st activity after patent acquisition.

The 3rd activity after patent acquisition was shown to be cross-licensing. For example, the number one supplier 'Philips' in the global lighting market and the world's fifth-largest LED supplier 'Cree' concluded a comprehensive cross-licensing agreement on the LED technologies

held by the two firms. They maximized synergy effects by respecting the value of the patents that the two firms hold and entered into a strategic win-win partnership. If a firm appears in the market as a late comer, it will have lots of troubles because it has no core technology. However, if the firm holds the patent associated with application technology, not core technology; it can utilize the patent through cross-licensing, like Philips and Cree, Inc.

Table 3. Activities after patent acquisition

	Cross Licensing	Fences Player	License Revenue	Technology Transfer
electronics	3.20	3.70	2.80	2.80
chemical	2.33	3.33	2.33	2.67
telecom- munica- tions	2.00	3.00	2.00	3.00
S/W	2.88	3.31	2.81	2.94
defense	2.50	3.50	2.00	2.50
machinery	4.00	4.67	4.33	3.33
pharma- ceutical	3.33	3.33	3.33	3.67
bio	3.50	3.50	3.00	3.00
motor	2.40	3.20	2.40	3.00
electric	2.67	3.33	3.00	2.67
metal	2.00	3.00	2.00	2.50
shipbuild- ing	3.50	4.00	3.00	2.00
textile	3.00	3.50	3.50	3.50
food or beverage	3.00	2.50	3.00	3.00
Total	2.92	3.44	2.74	2.91

Technology transfer was found to be the 4th activity after patent acquisition. There are registered patents that firms do not take advantage of because of their strategic direction or of significant costs for the commercialization. These patents are strategically intended to secure revenue by transferring technology to other companies. Technology transfer may be the strategy to be welcomed for the entire industry, but may make firms face a dangerous situation because of the patent not in use in which the technology has been transferred. Thus, careful selection is needed.

Royalty income from licensing was observed to be the 5th activity after patent acquisition. In the case of royalty income from licensing, Qualcomm's case is typical. For Qualcomm, among the company's total sales, royalty income accounts for 40%. For that reason, surveyed

firms valued the measure of ensuring royalties through licensing after patent acquisition.

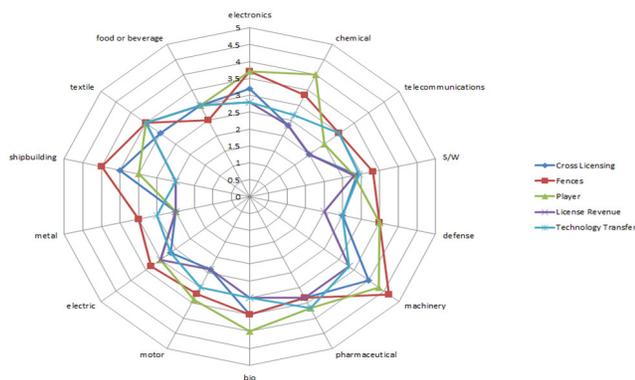


Figure 1. Activities after Patent Acquisition Radial Chart.

4.2 Resolution Strategies on Patent Disputes

Resolution strategies on patent disputes resulted to be counter-suits, followed by patent invalidation proceedings, cross-licensing, litigation through solidarity with other companies, and royalty payments.

Noticeably, counter-suits as an independent action turned out to be the 1st resolution strategy on patent disputes. Counter-suits as an independent action are the most common resolution strategy next to patent invalidation proceedings. For counter-suits as an independent action, however, the firm must have sufficient manpower and a dedicated team with respect to patents. The counter-suits as an independent action are one of the strategies that large firms with big money make out. The patent dispute between Samsung and Apple is a good example; Samsung filed a counter-suit as an independent action after Apple filed the lawsuit. However, for firms that are relatively insufficient in the number of patents, lack funds, and do not have dedicated staffs, counter-suits as an independent action may be one of difficult strategies.

The 2nd resolution strategy was shown to be patent invalidation proceedings. This is the most common and powerful measure that firms typically take. If a patent dispute occurs, a firm comes to file a lawsuit. In this case, however, the firm previously reviews whether the counter firm's patent has the prior art or not, is original or not, and is equipped with legal procedures and requirements or not. Then, if any defective part is found, the firm starts invalidation proceedings. In the recent patent dispute between Apple and Samsung, for instance, Apple's bounce back patent (Patent No. 381) became invalid in 2011;

Apple's touch screen-heuristics patent (Patent No. 949) was decided to be invalid. As a result, Samsung could take the advantageous position.

The 3rd resolution strategy was found to be cross-licensing. In general, this strategy is made out in the stable stage of the market. If a patent dispute occurs, litigation generally proceeds between firms. But proceeding with the litigation requires a huge amount of money, so most of patent disputes are often ends in cross-licensing. However, the cross-licensing is a secret agreement between firms so the agreement is not disclosed to the public. In the case of Osram and LG Electronics, they became involved in a patent dispute. But eventually they dropped the suit and signed a cross-licensing agreement.

Table 4. Resolution strategies on patent disputes

	Cross Licensing	Patent Suit	Patent Defeasance Suit	Patent suits banded together other company	Patent Royalty
electronics	3.30	3.40	3.10	2.90	2.80
chemical	2.67	2.33	2.33	3.00	3.00
telecommunications	3.00	2.50	2.50	2.00	2.50
S/W	2.63	3.19	3.00	2.50	2.63
defense	2.50	2.50	2.50	2.50	1.50
machinery	3.00	3.67	3.67	2.67	2.33
pharmaceutical	3.67	4.00	3.67	3.00	3.33
bio	4.00	4.00	3.00	3.50	3.50
motor	2.60	3.80	3.20	3.00	3.00
electric	4.33	3.67	3.33	3.33	3.00
metal	2.00	3.00	3.00	4.00	3.00
shipbuilding	4.00	2.50	3.00	4.00	1.50
textile	3.50	3.00	3.50	3.00	4.00
food or beverage	3.00	3.00	4.00	4.00	3.50
Total	3.04	3.26	3.11	2.91	2.79

Litigation through solidarity with other companies was reported to be the 4th resolution strategy. When a firm proceeds to litigation alone, a significantly higher risk is expected. High legal costs and a long time till litigation to proceed may make the firm exhausted. Because of this,

firms proceed with the lawsuit through solidarity with other firms. It is the similar one to the strategy that firms make out by building a united front to confront a patent troll.

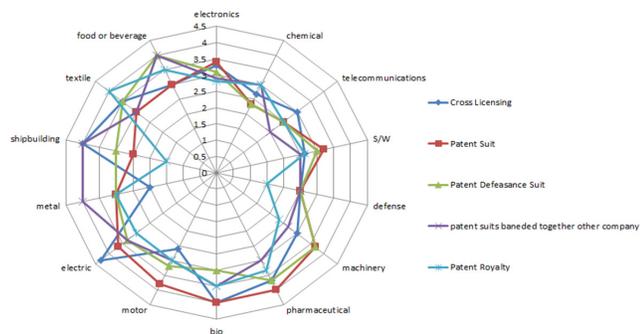


Figure 2. Resolution Strategies on Patent Disputes Radial Chart.

Royalty payment was observed to be the 5th resolution strategy. When a patent dispute occurs, the firm comes to acknowledge the patent infringement, agreed to get the license, and pay the royalty as a fee. It is a strategy generally adopted when a firm has no core technology or is sued by a patent troll. As NPEs holding patents only, not manufacturing products are on the rise; this patent litigation is expected to increase.

5. Conclusions

As the global territory expansion is accelerating, firms recognize that if they do not reform themselves, they will not survive in competition and thus die out. In addition, as the WTO system enters the settlement stage, global market liberalization is gradually accelerated and an invisible war is happening. In recent years, firms are making great efforts to protect their own area, beginning with the area of smartphones. But compared to the past, recently more firms fail to actively cope with the change and give up their lead to competitors or disappear from the market.

This study examined firms’ activities and resolution strategies on patent disputes after acquiring a patent for the results of R&D through the innovation under such circumstances,

First, activities carried out using acquired patents resulted to be building patent barriers (fences) (3.44), followed by manufacture (player) (3.28), cross-licensing (2.91), technology transfer (2.91), and royalty income

from licensing (2.74). In general, firms were reported to value building patent barriers (fences) and manufacture (player) as activities carried out using acquired patents.

This result may be explained by the characteristics of Korean industry. Since most firms in Korea don’t hold core technology or essential patents. They have been sued over patent infringement by global firms especially in the 1980s and 1990s. Firms that had recognized the importance of patents did not secure core technology but instead tried to obtain a patent on the part of application technology and to prepare for the patent disputes in the future. In general, if a firm obtains a patent, it will lead to producing products and provide services. That’s why building patent barriers (fences) and manufacture (player) appeared as an important factor.

The results for resolution strategies on patent disputes revealed counter-suits (3.26), followed by patent invalidation proceedings (3.11), cross-licensing (3.04), litigation through solidarity with other companies (2.91), and royalty payment (2.79).

It was reported that firms value counter-suits and patent invalidation proceedings as a resolution strategy in case of a patent dispute. In general, activities carried out during a patent dispute are litigations and negotiations. However, the analysis revealed that litigation was derived as a more important strategy. Given the recent patent dispute between Apple and Samsung, the most common and universal strategies are counter-suits and patent litigation proceedings, which are generally adopted by firms. Samsung and Apple have been engaged in a patent lawsuit even until 2014 from 2011. They have mainly made out counter-suits among the 5 resolution strategies. It is the very invalidation proceedings that are more powerful than litigation. As discussed earlier, Apple’s two patents became invalid for no novelty, inventive step. Most of patent disputes initially start with a lawsuit, but in the end the firms usually make a cross licensing agreement.

This study provides the following implications: First, existing prior studies have cited the survey data from other agencies. But this study conducted an empirical analysis on activities after patent acquisition and resolution strategies on patent disputes in firms. Second, the results of this study are expected to help patent practitioners, R&D personnel, decision makers, and executives in firms in that they may utilize the results to establish patent dispute strategies, construct patent portfolios, and make out patent dispute strategies.

Despite these implications, however, this study has limitations as follows: First of all, only 57 companies were surveyed, so it seems to be hard to generalize the results of this study. Future studies need to expand the number of firms to be surveyed and to make an industry, product-specific investigation. In addition, this study used the Delphi method as a research methodology, but for a more objective analysis, future studies should consider a variety of analytical methods such as pair-wise comparison, AHP, etc.

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