Identifying the Impact of Strategic Alliances on the Performance of SMEs

(Case Study: The Industry of Automotive Parts Manufacturers in Iran)

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Abstract

This study has investigated the effects of strategic alliances on the performance of small and medium sized enterprises (SMEs) of the industry of automotive parts manufacturers. Questionnaires have been distributed among 400 senior managers of SMEs of the industry of auto parts manufacturers based on stratified random sampling. The data has been analyzed using structural equation modeling software and PLS2 software in two segments of measurement model and structural model. In the first segment, technical features of the questionnaire were tested in terms of reliability and validity. Moreover, in the second segment, t-test was used to test research hypotheses. The results show that there is a significant and positive relationship between the dimensions of strategic alliances, including new opportunities, entrepreneurial and innovative capabilities, social capital, and internationalization of business, and competitive advantage with the performance of SMEs.

Keywords: strategic alliance, performance of SMEs, automotive parts manufacturers

1. Introduction

By the end of the 20th century, there was a competition between businesses. The rapid growth of different kinds of alliances was an important feature of this competition and increasing uncertainty (Koza and Lewin, 2000). Enterprises started to share their competitive environment once competition increased, so that an independent function in this space has become very difficult. As a result, forming alliance with large companies is the strategic solution for companies, and in particular SMEs, so they can survive in such competitive environment (Etemad et al., 2001). Also, investigations have shown that alliances allow companies to develop their capabilities and minimize the competitive uncertainties resulting from competition and environmental changes through the acquisition and utilization of new knowledge (Rothaermel and Deeds, 2004). Furthermore, strategic alliances provide a platform for exchanging important resources as well as strategic advantages such as skills and competence, market access and promotion of legitimacy. In addition, enterprises make use of strategic alliance as a means to achieve their goals and increase their competitive power (Gençet al., 2012).

As is known, SMEs form an alliance with other enterprises due to the lack of financial, physical and managerial resources, and eventually this alliance allows the contribution of major financial and non-financial resources among these businesses (Hyder and Abraha, 2004; Joshi and Dixit, 2014). In general, strategic alliances provide a wide range of tangible and intangible benefits for each party. What are the functions/benefits of forming alliances? How can they be developed, what factors cause it easier to use these functions or prevent using them, and what is the effect of alliance on the performance of SMEs? All these questions have been studied separately over time; however, no comprehensive answers are provided for these questions (Street and Cameron, 2007). One of the major problems in the industry of automotive parts manufacturers is that a lot of parts manufacturers are mostly small-sized and have limited technological capabilities and their growth requires help and support. Therefore, according to the ruling circumstances of automotive parts manufacturing, small firms can only form alliance with other small firms or participate either with other automotive parts manufacturing enterprises or with major auto manufacturers. Investigations that have taken place on the prestigious scientific databases indicate that no investigations on strategic alliances and on its impact on the success and survival of SMEs are carried out in Iran.

Therefore, this paper has tried to correct this gap and both propose a model and answer question, "Whether strategic alliance has any impact on the performance of SMEs in the industry of automotive parts manufacturing?

2. Theory and Literature Review

2.1 Strategic Alliance

When the value chain activities of at least two companies with structures consisted of compatible objectives are combined in order to maintain or achieve significant competitive advantages, strategic alliances are formed (Bronder and Pritzl, 1992). On the other hand, strategic alliances lead to transactions which ultimately help alliance parties to achieve their goals. Also, this partnership improves their performance by reducing costs, acquiring knowledge and market development (Zoogah et al., 2011).

2.2 Dimensions of Strategic Alliance

2.2.1 Strategic Alliance and Competitive Advantage

In today's competitive era, SMEs have entered into alliances with other enterprises in order to achieve competitive advantage due to resource limitations and their size restrictions. In the study carried out by Hung et al. (2015), it is stated that cost efficiency, product quality, flexibility, and better delivery are four dimensions of competitive advantage. Moreover, alliances are a source to achieve strategic resources and network sources, resulting in the entrance of SMEs into competitiveness and ultimately they bring long-term benefit leading to the superior performance of these firms. Competitive advantage is achieved through the acquisition of two resources including tangible resources (manpower, equipment, financial resources, and production capacity) and intangible resources including knowledge, organizational learning, market image, and innovative capabilities (Zhao, 2014).

In general, competitive advantage is defined in preceding studies as, "to achieve strategic resources and (marketing, human, technical) knowledge, to raise awareness of the competition, to reduce dependency, to strengthen the innovative approach, to achieve economies of scale in production, to achieve dynamic capabilities and complementary resources and flexibility, to reduce risk taking, to develop market development capabilities, to learn from the skills, to take advantage of management practices of partners, and to acquire recognition. This comprehensive definition of competitive advantage is presented in preceding studies on strategic alliance carried out by Street and Cameron (2007), Jeje (2014), Companys and McMullen (2007), Dyer and Singh (1998), Lew and Sinkovics (2013), and Ireland et al., (2002).

2.2.2 Strategic Alliances and Innovative and Entrepreneurial Capabilities

Innovative and entrepreneurial capability of SMEs is another aspect of strategic alliance. In a study on Portuguese SMEs, it is observed that innovative and collective capabilities are of the most important factors for forming alliances and being engaged in them. Ireland et al. (2002) stated that it is the tracking of innovations with high economic value through sharing the information and knowledge among companies which stimulates the decision to form strategic alliance (Zhao, 2014; Franco and Hesse, 2013). Furthermore, networks are an increasing component of entrepreneurship; they strengthen the ideas, pursue better opportunities, have access to a wide variety of information, and they propose an option to companies so that they can expand their current capabilities (Hoskisson et al., 2011). Lafley, the former CEO of P&G, said that in today's competitive world, no single company is able to innovate and grow fast. Innovation is rarely achieved through internal resources; however, it can be achieved through relations, knowledge, and external information. So external networks strengthen the collective capabilities and acquiring knowledge and various ideas which are a source of innovation (Baker et al., 2015)

2.2.3 Strategic Alliance and Internationalization of SMEs

Alliances and contractual arrangements are effective tools for the internationalization of small firms. SMEs will be able to share some of the costs through alliances. Cooperation arrangements can be a way to improve the international performance of family businesses through having access to information and reducing uncertainty when entering international market. Cooperation with other companies, clients, or customers in local market provides useful information about business opportunities, international market characteristics, barriers and problems, as well as the risk of entering international market. As a result, forming alliance with other companies is a way to internationalize SMEs (Fernandez and Nieto, 2005). Entrepreneurial firms could use the alliance to expand their foreign sales base. Small firms can develop their innovation through forming strategic alliance, and on the other hand, they can facilitate their entry into the foreign market by having access to financial resources and complementary partner resources (Leiblein and Reuer, 2004).

2.2.4 Strategic Alliance and Social Capital

Social capital is defined as the development of relationships between one company and other companies and is an important resource in the alliance leading to the success of SMEs. In strategic alliance, social capital is considered as the development of representatives of company partners in interaction with other companies. For example, relationship with leading firms is a valuable resource for small firms. Therefore, firms are looking for partners with significant social capital so that they can have access to network resources. On one hand, evidences show that success is a function of the quality of the relationships between partners. Achieving social capital increases the probability of the success of strategic alliance due to trust and the tendency to share resources among partners (Ireland et al., 2002). Social relations create opportunities through deep awareness, trust, and commitment among partners leading to personal relationships, and awareness of situation and reputation of key people in firms (Eisenhardt and Schoonhoven, 1996).

2.2.5 Strategic Alliance and New Opportunity

Investigations manifest that in the first place, SMEs form alliance with large-sized companies to exploit the opportunities and identify the opportunities. Strategic alliance of the companies in the area of identification and/or exploitation can be categorized on the basis of their motivation to identify new opportunities or exploit existing opportunities (Yung et al., 2014). On identification level, alliances try to identify new knowledge. Entrepreneurial activity includes not only innovation of new product but also identification of new opportunities and market such as the needs of our customers. Since the strategic alliance includes the relationship among large companies and SMEs, so SMEs form alliance with big companies to identify new customers and markets as well as to exploit these markets and new markets (Joshi and Dixit, 2014).

2.3 Evaluating the Performance in Alliance

There is no consensus about the performance and success of the alliance and there has never been a comprehensive definition of success and performance in alliance. Arino offered a relatively comprehensive framework of alliance performance in 2003. In his research, he has categorized alliance in three groups: financial performance (when firms achieve their financial goals), operational performance (the positive impact on business activities, survival, and continued cooperation) and organizational effectiveness (which embraces both previous groups and includes the realization of objectives and goals, spillover effect, and satisfaction from forming alliance).

2.4 Conceptual Framework of Study

Many studies investigated strategic alliances and its impact on performance. However, few studies investigated the impact of strategic alliance on the performance of SMEs, and there are few studies focused on the mentioned dimensions in parts manufacturing industry. The model used in this study consists of dependent and independent variables (Figure 1), and all dependent and independent variables which are used in this study are clarified and explained in previous parts. Moreover, the relationships between each of these variables are also reviewed and analyzed on the basis of previous studies. This framework is based on existing theoretical and applied fundamentals, especially studies carried out by Zhao (2014), Yung et al., (2014), Wittmann et al., (2009), Fernandez and Nieto (2005), and Arino (2003).
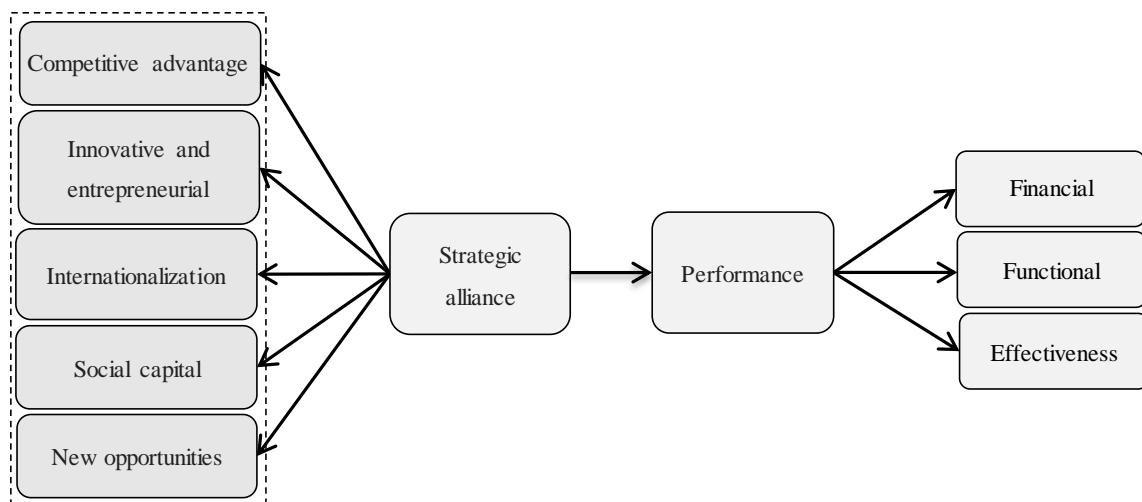
Figure 1. Conceptual Framework of Research

Based on the conceptual framework of research, hypotheses are as follows:

Main hypothesis: There is a positive relationship between strategic alliance and the performance of small firms.

Secondary hypothesis (1): There is a positive relationship between competitive advantage and the performance of SMEs.

Secondary hypothesis (2): There is a positive relationship between innovative and entrepreneurial capability and the performance of SMEs.

Secondary hypothesis (3): There is a positive relationship between the internationalization of business and the performance of SMEs.

Secondary hypothesis (4): There is a positive relationship between social capital and the performance of SMEs.

Secondary hypothesis (5): There is a positive relationship between identifying new opportunities and the performance of SMEs.

3. Research Methodology

This study is based on an applied purpose, data is collected based on a descriptive survey method and the type of collected data is quantitative (collected with a questionnaire). So a questionnaire is used to collect data from people involved in this issue (senior managers working at automotive parts manufacturing segment). Structural equation modeling method with SmartPLS2 approach was used to analyze data and comprehensive examination of conceptual model. This research method is the best tool to analyze data when the relationships between variables are complex, the sample size is small, and the distribution of the data is not normal (Diamantopoulos et al., 2012). Structural equation modeling is consisted of two parts of measurement and structural model and model variables are classified in two categories of observable and latent variables; latent variables are also used at different levels. In this study, there are two latent variables on the first level, 8 latent variables on the second level (that are in the same size as the variables on the first level), and 44 observable variables (questions of the questionnaire) (Table 2).

Table 1. Latent variables on the first and second level and observable variables

Latent variables on the first level	Latent variables on the second level (dimensions)	The number of observable variables (questions)
Strategic alliance	Competitive advantage	14
	Entrepreneurial capability	7
	Social capital	4
	Internationalization of business	4
	Identifying new opportunities	6
Performance	Financial	3
	Functional	3
	Organizational effectiveness	3

Automotive parts manufacturing SMEs in 9 sections (body, decorators, polymers, mechanisms and standards, main engines, accessories, electrical, powertrain, suspension and brakes) are the statistical population of this study and primarily have strategic alliance, and secondly, the number of their employees is less than 250. The population of this study contained all of experts that worked in two greatest auto part manufacturers of Iran. The number of these experts estimated about 1300 people. Sample size had to be gained from this population. For this purpose the Cochran formula for limited population have used as below:

$$n = \frac{N\left(Z_{\frac{\alpha}{2}}^2\right)pq}{(N-1)d^2 + \left(Z_{\frac{\alpha}{2}}^2\right)pq}$$

Where

n=statistical sample size;

N=statistical population size which is 1300 people in this study;

P=the ratio of the trait in the statistical population. Here variance is considered to be at the maximum level and hence p=0.5.

q or 1-p= The ratio of the absence of a trait in the statistical population. Since here p=0.5, then q=1-p=0.5.

Z=considering that in this study the significant level equals 0.95, then Z=1.96.

d=desired possible accuracy which is considered to be 0.05 in the present study.

$$n = \frac{1300\,(1.96)^2 0.5 * 0.5}{(1300-1)(.05)^2 + (1.96)^2 0.5 * 0.5} = 384$$

According to Cochran formula, the sample size is calculated to be 384 people and to make sure that sufficient questionnaires would be collected, 400 questionnaires were distributed. Eventually, 385 questionnaires were collected and analyzed.

3.1 Validity

The validity of the questionnaire is examined through convergent and divergent validity specific to structural equation modeling. At this point, AVE (Average Variance Extracted) criterion is used to assess the convergent validity, and results are shown in Table 2:

Table 2. Convergent validity of research variables

variables	Competitive advantage	Entrepreneurial capability	Social capital	Internationalization of business	Identifying new opportunities	Financial	Functional	Organizational effectiveness
AVE	0.510	0.525	0.790	0.605	0.558	0.687	0.651	0.715

Table 3. The matrix to compare the square root of AVE and correlation coefficients of structures (divergent validity)

Variables	Entrepreneurial capability	Organizational effectiveness	Financial	Internationalization of business	Identifying new opportunities	Functional	Social capital	Competitive advantage
Entrepreneurial capability	0.724							
Organizational effectiveness	0.612	0.846						
Financial	0.591	0.509	0.832					
Internationalization of business	0.615	0.471	0.457	0.889				
Identifying new opportunities	0.406	0.656	0.403	0.352	0.806			
Functional	0.661	0.626	0.782	0.543	0.554	0.747		
Social capital	0.579	0.581	0.456	0.461	0.480	0.598	0778	
Competitive advantage	0.662	0.460	0.401	0.641	0.387	0.534	0.601	0.663

Approved value for the AVE is 0.5 (Fornell and Larcker, 1981). As shown in Table 3, the values of all variables are more than 0.5; therefore, convergent validity of research variables is approved. For divergent validity, a comparison is made between the difference of the indices of a structure and those of other structures in model. This is done through comparing the square root of AVE of each structure and the correlation coefficient of structures. As you can see in the following matrix (Table 4), the values of the main diagonal of the matrix (the square root of AVE coefficients of each structure) are more than the values which are located lower and upper the main diagonal (the correlation coefficients between each structure and other structures) which indicates that the divergent validity of structures is approved.

3.2 Reliability

PLS approach is used to examine the reliability of the questionnaire. The reliability of the questionnaire is measured on the basis of two criteria, Cronbach's alpha and Composite Reliability (CR). Regarding the first and second criteria, the value of Cronbach's alpha and the coefficient of composite reliability must be higher than 0.7 so that the reliability is approved (Fornell and Larcker, 1981; Cronbach, 1951). In this study, the results of the first two criteria of reliability are presented in Table 4 and clearly the results indicate that the reliability is approved for this study.

Table 4. Criteria for convergent reliability/validity of research variables

Variables on the first level	Variables on the second level	Cronbach's alpha	Coefficient of Composite Reliability (CR)
Strategic alliance	Competitive advantage	0.901	0.916
	Entrepreneurial capability	0.849	0.885
	Social capital	0.911	0.938
	Internationalization of business	0.782	0.860
	Identifying new opportunities	0.842	0.883
Performance	Financial	0.746	0.863
	Functional	0.731	0.848
	Organizational effectiveness	0.801	0.883

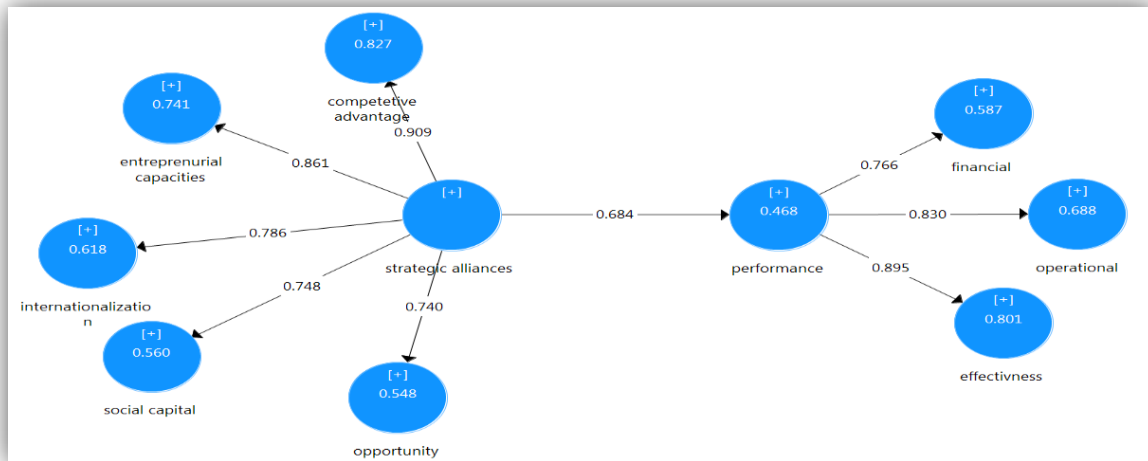## 4. Research Hypotheses Analysis

Figure 2. The output of software for conceptual model (standardized coefficients)
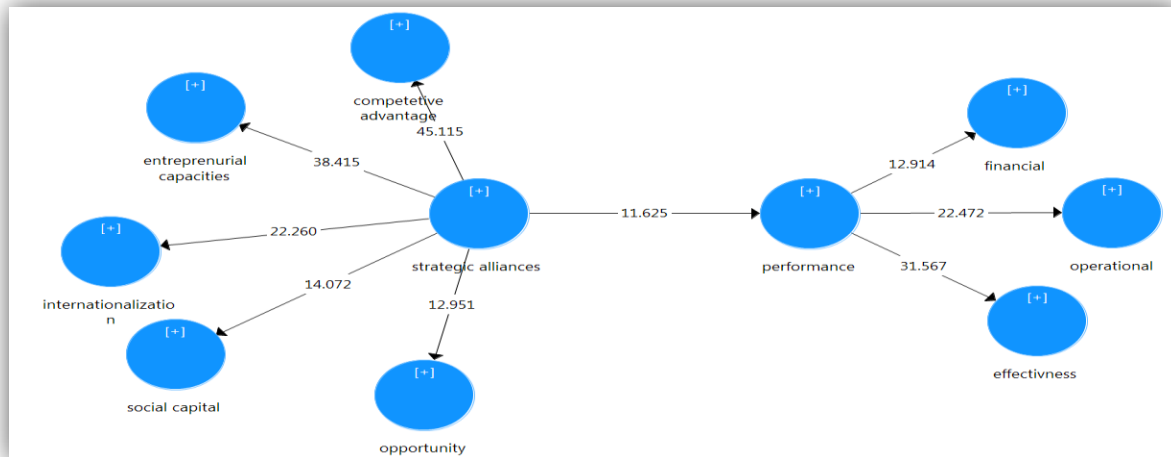

Figure 3. The output of software for conceptual model (significant)

Output of SMART PLS 2 software on the main hypothesis indicates that the significant coefficient of this path (11.625) is more than 1.96; therefore, the impact of strategic alliances on the performance of SMEs is approved at 95 percent confidence level. Moreover, the other output of software includes standardized coefficients indicating that strategic alliance variable explains 68% of performance changes. Outputs of software for secondary hypotheses are mentioned in Table 5.

Table 5. Significant coefficients and standard of secondary research hypotheses

Secondary hypotheses	Standard coefficient	Significant coefficient (t)	Result
Competitive advantage → performance	0.503	6.589	Confirmed
Entrepreneurial capability → performance	0.650	10.481	Confirmed
Internationalization → performance	0.515	6.957	Confirmed
Social capital → performance	0.617	10.668	Confirmed
New opportunity → performance	0784	22.042	Confirmed

5. Discussion and Conclusion

This study investigates the effect of strategic alliance on the performance of SMEs in an analytical framework. The findings of this study confirm that there is a significant positive relationship between strategic alliance and the performance of SMEs.

The first findings suggest that the impact of new opportunities on the success and performance of SMEs is 78% which is the most, and businesses form alliance and cooperate with large-sized automotive parts manufacturers looking for opportunities including new market, new product, and new cooperation opportunities. These findings

are in accordance with previous findings. Yung et al. (2014) used a panel method to review the cooperation between SMEs and large companies in Biotech industry and concluded that identifying new opportunities through cooperation is one reason for SMEs to cooperate with large companies. Furthermore, Stettner & Lavie (2014) investigated the reasons why companies form strategic alliance. This study was conducted among 190 companies using software with the help of a questionnaire as research instrument and eventually came to the conclusion that one of the aspects of strategic alliances to manufacturers is to identify new opportunities through knowledge acquisition.

In addition, the second finding suggests that the impact of innovative and entrepreneurial capability on the performance of SMEs is 65 percent which is positive and significant. As the findings show businesses select alliance as a strategic option to achieve more ideas, strengthen their (managerial, productive) capabilities, and strengthen their risk taking ability. Franco and Hesse (2013) conducted their study using a questionnaire among 89 Portuguese companies and finally concluded that factors such as financial resources, as well as innovative and collective capability are the cause to enter to and participate in alliance. Similarly, Zhao (2014) reviewed respective literature, and proposed an integrated model and came into this conclusion that SMEs form alliance with large firms to strengthen entrepreneurial and innovative capability.

The third findings manifest that social capital is also one dimension of alliance and has a direct and significant relationship (62 percent) with the performance of SMEs. The results of this study reveal that SMEs form alliance to develop network resources and communication and form quality relationships based on trust. These findings are compatible with the findings of previous studies. Wittmann et al. (2009) examined the impact of strategic alliance on business success among 230 firms using a questionnaire; eventually the results showed that strengthening social capital is one dimension of alliance which is achieved through a partnership based on trust, commitment and good communication and leads to the superior financial performance of the business. Moreover, Ireland et al. (2002) and Eisenhardt and Schoonhoven (1996) revealed that achieving social capital increases the likelihood of the success of strategic alliance.

The fourth findings of this study indicate that internationalization of business is one aspect of strategic alliance and has direct and significant relationship with performance and explains 52% of performance changes. Alliance allows small firms to get familiar with (tastes, standards of) foreign market and as the result of this collaboration, businesses enter international market either directly through creating products or indirectly through intermediate products. Leiblein and Reuer (2004) and Fernandez and Nieto (2005) also examined 101 manufacturing company and came to the conclusion that internationalization of business through increased sales and increased international experience is one of the important aspects of the formation of alliance, and increases the likelihood of the success of entrepreneurial and family businesses.

Finally, the fifth findings also indicate that competitive advantage explains about 50 percent of the performance of business. Again, these findings are in line with the findings of previous studies. Street and Cameron (2007) examined 218 articles published during 1990-2002 using meta-analysis and concluded that strengthening competitive advantage through increasing competitive awareness, knowledge, having access to tangible and intangible resources, flexibility, marketing benefits and so on is one of important dimensions of the alliance of small firms with other firms. Moreover, Zhao (2014), Ireland et al. (2002), and Wittmann et al. (2009) claimed that strengthening competitive advantage is one important dimension resulting from forming alliance.

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