

# The Effect of Organizational Responding on Technology Innovation

—Based on the Analysis of Chinese Auto-Industry

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**Abstract:** This paper uses case study to analysis the effect of organizational responding on technology innovation ability. Based on the background of Chinese auto-industry, we first summarize the specific needs and the evolution of market context that the vehicle manufacturing enterprises embedded in from 1978 till now. Second, we choose FAW and GEELY as the representative of SOE and private enterprise respectively, analysis their responding behaviour to market context, which includes responding type and responding degree. Third, we explain how different responding behaviours influence the development of technology innovation. The results show that the follow-up-type of responding of SOE is not beneficial to the improvement of enterprises' technology innovation ability, and the pioneering-type of private enterprise has a positive effect.

## 1. Introduction

The research of the influence factors on enterprise's technology innovation, which can be divided into internal and external ones, has achieved significant results. However, the current researches rarely discuss the situation when the technology innovation ability remains different, even if the enterprises are embedded into the same external context. For this situation, the organizational responding theory assumes that the organizations do not accept the demands of external context passively<sup>[1]</sup>, but to respond initiatively after sensing, understanding and evaluating. Therefore, the way and the degree of the organizational responding can explain the reason of different organization behavior<sup>[2]</sup>. The organizational responding theory provides a new perspective for understanding the enterprise's technology innovation ability.

Based on the case study on the technology innovation ability of SOEs and private enterprises, the paper aims to identify the ways and characters of Chinese enterprises' responding and the forming mechanism under the context of transition economy, and the effect mechanism on technology innovation ability of organizational responding.

## 2. Literature Review

The research of organizational responding can be divided into two categories. One is the way of organizational responding, and the other one is the influence factors of organizational responding. Firstly, based on the current research, Greenwood etc.<sup>[3]</sup> concluded that how organizations respond to the external context can be classified according to whether the organization focuses on its strategy or its structure. The researches which focus on organizational strategy mainly explain why the organization employ the specific strategy under the given context. The strategies can be categorized as de-couple strategy<sup>[4]</sup>, compromise strategy<sup>[5]</sup> and the combination strategy<sup>[3]</sup>. The researches which focus on organizational structure divide the organizations into two types, which are blended hybrids<sup>[6][7]</sup> and structurally differentiated hybrids<sup>[8]</sup>. Secondly, Thornton and Ocasio<sup>[2]</sup> concluded the organizational characters that influence the organizational responding, which are the status of organization in the field, the organizational structure, ownership, and

identity. They assume that these characters affect how and in what way organizations respond to the external institution.

To summarize, on one hand, the current researches mainly focus on the western context, but rarely notice the transition economy, such as China. On the other hand, there is a lack of understanding on the forming mechanism of organizational responding<sup>[9]</sup>. Therefore, this paper attempts to analysis the organizational responding behavior under the context of transition economy. Based on the Chinese auto-industry, we compare the organizational responding behaviors between the SOEs and private enterprises to analysis the effect of it on enterprises' technology innovation.

### 3. Research Design

According to the purpose of the paper, we select the case study as the research method, which is the appropriate one to answer the question of “how” and “why”<sup>[10]</sup>. We choose FAW as the representative of the SOEs and GEELY as the private enterprises. The basic information of them, such as the ownership, the way of R&D and the ability of the technology innovation, are summarized in Table 1. Besides, the external context is set in the market context, because the market has a deep influence on the enterprises' behaviour. As the relationship mechanism of the sellers and the buyers, the market context contains the information of product price and quality<sup>[11]</sup>. Therefore, the data of the market context is mainly from the Chinese auto-industry yearbook, which includes the information about market structure, sales volume, market share. The data for the enterprises is mainly from the website, media, observation.

Table 1 The basic information of FAW and GEELY.

	Ownership	Assets (Million/ Dollar)	Employees	Products
FAW	SOE	49768.8	132,083	OBM & JV
GEELY	Private enterprise	24838.9	18000	OBM

### 4. Data Analysis

#### 4.1. The Demands of the Market Context

Based on the data of the automotive products market, the evolution of the market context can be summarized into three phases. Phase I started in 1978, ended in 2000. Phase II was from 2001 to 2007, and Phase III was from 2008 till now. As showed in table 2, the market context changes in the agents and the specific demands.

Table 2 The demands of market context.

	Phase I (1978-2000)	Phase II (2001-2007)	Phase III (2008-now)
Agent	mainly the government and public institutions	mainly the private consumer	mainly the private consumer
Demands	mainly the demands for official vehicles	mainly the demands for joint venture products	mainly the demands for joint venture products, but the demands for self-owned brands growing fast

#### 4.2. The Responding of FAW and GEELY

Based on the summary of the behaviour of FAW and GEELY, we analysis and compare the responding and the characters of them as in Table 3 and 4 showing.

Table 3 The responding and the characters of FAW.

	Logic Demands	Responding Behaviour	Characters of Responding
Phase I	Mainly the government and public institutions	FAW had an advantage in the consuming market of official vehicle	Comprehensive and high-degree responding
	The demands of private consumer was growing	Built the vehicle produce ability by striving the producing qualification for passenger cars and joint venture and corporation with Volkswagen	
Phase II	Mainly the demands for joint venture products	FAW took a further cooperation with the foreign investors The cooperation with Toyota expanded into full range of products. FAW-Volkswagen formed the annual production capacity of 700,000 vehicles	Differentiated responding, high responding degree to the need of joint-venture and low to the self-owned brand
	The demands for self-owned brands as supplementary	The sale volume of self-owned brand, Besturn, was 23,300 in 2007	
Phase III	Mainly the demands for joint venture products	Took joint-venture brand vehicles as the leading role in its development In 2017, the sale volume of FAW-Volkswagen was as high as 1,358,100, and of FAW-Toyota was 689,200.	Differentiated responding, high responding degree to the need of joint-venture and low to the self-owned brand
	The demands for self-owned brands growing fast	Focus on the development of its self-owned brand, the sale volume was only 240,900 in 2017	

Table 4 The responding and the characters of GEELY.

	Logic Demands	Responding Behaviour	Characters of Responding
Phase I	Mainly the government and public institutions	Lack of producing qualification for passenger cars.	No responding qualification, low responding degree
	The demands of private consumer was growing	Entered into the market of passenger cars with its production sold as micro-bus.	
Phase II	Mainly the demands for joint venture products	No opportunity of cooperation with foreign investors	Partially responding, high responding degree to the need of self-owned brand
	The demands for self-owned brands as supplementary	Obtained the producing qualification in 2001 and entered into the market with low price strategy. In 2004, the sale volume was 80,000. In 2007, implemented high-level transformation strategy.	
Phase III	Mainly the demands for joint venture products	No production of joint-venture brands vehicles.	Partially responding, high responding degree to the need of self-owned brand
	The demands for self-owned brands growing fast	Improved its technology ability and product images by M&A.	

#### 4.2.1. Phase I

In phase I, FAW met the official vehicle needs of market context for its early experience in

manufacture of Hongqi and localized-production of Audi. In the meantime, FAW seized the opportunity of auto-industry's development to build the vehicle produce ability by striving the producing qualification for passenger cars and joint venture and corporation with foreign investors, which allows FAW meet the needs of personal consumer. Thus, in phase I, the responding to the market context of FAW is comprehensively, and the degree of responding is high.

However, GEELY couldn't respond to the market context for the lack of producing qualification for passenger cars. Although GEELY assembled its first sample production by imitating some other vehicle types, and released its first passenger car, which is called Haoqing 6360, neither the output nor the quality can compete with the coetaneous SOEs. The sales volume were just hundreds, and the production of GEELY is sold as micro-bus. Thus, in phase I, the responding degree to the market context of GEELY is low.

#### **4.2.2. Phase II & III**

In Phase II, FAW took a further cooperation with the foreign investors by seeking for a new joint venture partner, Toyota Motor Corporation. Besides, the corporation with the old partner, Volkswagen, was expanded into co-developing which was aimed to meet the local consumer demand better. Thus, at the end of phase II, FAW-Volkswagen formed the annual production capacity of 700,000 vehicles, and the sale volume of FAW-Toyota was 151,000. But the sale volume of self-owned brand, Besturn, was just 23,300. In Phase III, FAW decided to take joint-venture brand vehicles as the leading role in its development. Thus, in 2017, the sale volume of FAW- Volkswagen was as high as 1,358,100, and of FAW-Toyota was 689,200. Although FAW has put forward the strategy as focus on the development of its self-owned brand, the sale volume was only 240,900, which was much lower than that of joint-venture brands. From the difference between FAW's joint-venture and self-owned brands on the sale volume, we can see that FAW takes a differentiated responding behaviours to the market context. The responding degree to the need of joint-venture brands is high, and that of self-owned brand is low.

GEELY obtained its producing qualification in phase II. However, GEELY couldn't respond to the market needs for joint-venture brand vehicles for its lack of opportunity to cooperate with the foreign investors. Thus, in phase II, the way of GEELY's responding is partially. The degree of GEELY's responding to self-owned brand is getting higher, which can be seen in two aspects. First, GEELY is implementing high-level transformation strategy, which can help GEELY to meet the market needs for self-owned brand much better by improving its technology ability and product images. Second, the sales volume is getting higher. In 2017, GEELY has ranked top one in the sales volume ranking of self-owned brand enterprises.

To summarize, FAW and GEELY respond differently to the needs of market context in three phases. In phase I, both of them have a positive will to respond. The difference is that FAW had a comprehensive and high degree responding, but GEELY had no responding qualification. Since phase II, FAW has taken a differential responding way, which maintains high responding will and degree to the needs of joint-venture brand vehicles, but low responding will and degree to the self-owned brands. GEELY takes the partial responding way for lack of the joint-venture brand products. But the willing and the degree of responding to the self-owned brands are becoming higher and higher.

## **5. Discussion**

Since the joint-venture brand vehicles are the main needs of the market, the focus on them can help the enterprises to increase the profit. This is the reason that FAW choose to respond mainly to the need for joint-venture brand vehicles. The organizational identity, which is the state-owned enterprise, guarantees that FAW can respond to the joint-venture brand for it has the opportunity to cooperate with the foreign investors. However, the responding to the joint-venture brand of the market needs has an adverse effect on enterprises' technology innovation ability. The effect mechanism can be summarized as Figure 1 showed. For one hand, the foreign partner blocks the output of its core technology strictly. As an interviewee from FAW-Volkswagen saying that as a

joint-venture, the independent R&D ability of FAW side isn't so good. The R&D of the core parts and components, such as engine and chassis, are led by the foreign partner. The FAW side mainly engages in the work of management and coordination. On the other hand, independent R&D is not the prime way of development in consideration of the profit of the enterprise. As the interviewee said that there is no need to make the R&D completely independent as for its long duration and high cost.

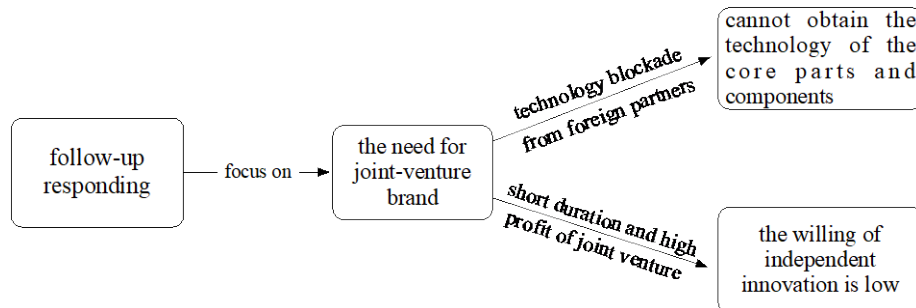


Figure 1 The effect of organizational responding on technology innovation of FAW.

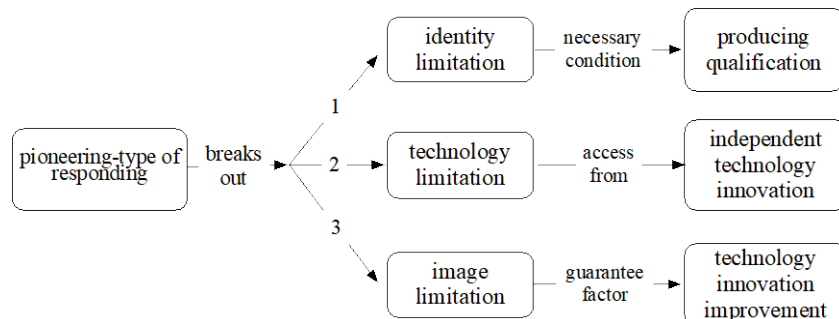


Figure 2 The effect of organizational responding on technology innovation of GEELY.

By the limitation of the organizational identity, GEELY, as the private enterprise, can only meet the consuming demand of self-owned brand vehicles. Since the self-owned brand vehicles are not the main demand of market context, the private enterprises have to create new consumption demand for the consumer so that they can maintain the market share, compete with the joint-ventures and gain the profit. To summarize, the private enterprise takes the pioneering-type of responding to meet the needs of market context. For them, the improvement of technology R&D ability is the protection factor to respond. As showed in Figure 2, in Phase II, GEELY, as a private enterprise, couldn't cooperate with the foreign investors, which meant that it couldn't obtain the technological support from joint venture like FAW did. Under this circumstance, independent R&D becomes the efficient way for GEELY to build and improve its technology ability. Thus, GEELY built and mastered the technology of vehicle manufacturing and the core components, such as speed transmission and engine, by independent R&D and joint exploration led by GEELY, which makes the technological guarantee for it to enter into the market and compete with joint-venture brands. In Phase III, improving the technological level of the product is favourable for GEELY to get rid of its cheap product image and to transform into high level. Thus, GEELY merged DSI to improve its technology ability of automatic transmission and Volvo Car Corporation to improve its platform technology and product images. To summarize, capturing the technology of core components and improving technology level are basic for GEELY to responding to the market needs, which is good for the development of its technology ability.

## 6. Conclusion

We used case study to compare the responding behaviours to the market contexts of SOE and private enterprise form Chinese auto-industry, analysed the effect of responding on technology ability. The results showed that, for the market demands, which is mainly the joint venture products and the demands for self-owned brands growing fast, the SOE (FAW) takes the way of

differentiated responding. The degree of responding to the joint venture products is high, and to the self-owned brands is low. This kind of follow-up type responding counts against the development of the R&D ability and the improvement of technology level. However, despite GEELY can only respond to the self-owned brands for the limitation of its organizational identity as private enterprise, its pioneering-type responding dose good to the development of independent R&D ability. Because this kind of responding, which needs to create new consuming demands to increase market share, is based on the improvement of its technology innovation. All in all, different ways of responding to the market context affect the development of enterprises' technology innovation ability.

The theory contribution of the paper is that, first, we analyse the organizational responding behaviour and the characters under the context of transition economy, which extends the research scope. Second, we explore the reason why enterprises have different level of technology abilities under the same external context from a new theoretical perspective of organizational responding. In the future study, we should expand the study samples to analyse organizational responding behaviour from different industries and more enterprises, which aims to improve the external validity of the study. Besides, we need to explain the forming mechanism of organizational responding in order to better understand it.

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