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Moderating Effect of Service Delivery Systems on Relationship between Service Innovation and Corporate Performance in Chinese Industry

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Abstract

The first goal of this study is to confirm if service innovation has positive effect on corporate performance in China. The second goal is to whether the two service delivery systems of technical one and workforce-oriented one have positive moderating effect on that relationship respectively. For those purposes, surveys and empirical studies using validity check, regression model and moderate regression model are conducted.

As the results of those studies, we found that service innovation has positive effect on corporate performance in sample companies of China. Furthermore, technical service delivery system showed positive moderate effect on relationship between service innovation and corporate performance, while workforce-oriented service delivery system did not. These results give us an managerial implication that when service innovation and technical service delivery system are matched, they show synergy effect and can improve performance more effectively than workforce-oriented one

Keywords: *service innovation, service delivery system, Chinese industry. moderate regression model,*

1. Introduction

Innovation has been prevalently regarded as a strong driver of competitive advantage and company growth. Companies try to survive and to go ahead in competition through innovation especially in developing countries like China. Effective management needs innovation and, as a result, competitiveness, and these two are regarded as powerful drivers of sustainable growth especially in developing countries.

Technological innovation is generally defined as a strategy that companies take to get ahead in fierce competition and is divided into "product innovation" and "process innovation" (Utterback and Abernathy, 1975) [8].[1]

Based on general concept of innovation, service innovation is important issue for service companies to survive in competition which is getting fiercer. In service, innovation by suggesting and applying creative ideas, new products, and new working processes are important source of service innovation (Keng and Mahmood, 2013) [6]

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In service providing process for customers, two types of service delivery systems are used – technical and human-oriented. The former is highly dependent on facility but has lower dependency on human workforce and the focus is on cost-savings, while the latter focus on customization and is dependent on human workforce more, less on facilities (Kelly, 2015) [5]. We tried to check if there are some differences in corporate performance by service companies' taking two service delivery systems.

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2. Literature Review

2.1 Innovation and Service Innovation

Originally, Schumpeter defined innovation as "the reflection of novel outputs of a new good, a new method of production, a new market, a new source supply, or a new organizational structure" and suggested that innovation can be classified as product, process and business model innovation (Chang et al. 2015)[1].

Product innovation, unlike process innovation, refers to the new products or services which are introduced into the market to satisfy customers' needs and wants, while process innovation refers to new factors – including new management approaches, production methods and new technologies – which are introduced into organizations' production and service operations(Chang et al. 2015)[1] While product innovation is customer oriented and targets a market, process innovation is focused on improving tools, devices, or knowledge that convert input into a product. Therefore, the latter, which pursues efficiency, is an internal activity of an organization (Utterback and Abernathy, 1975) [8]. Due to such strategic differences, product innovation generates outcomes that are visible to customers, whereas process innovation is not materialized externally. Because the outcome of process innovation is less visible to customers, companies tend to miss the critical role of process innovation but it is not less important to a company's success than product innovation. Process innovation improves companies' ability to develop, enhance and re-configure resource and capabilities which allow important sources of competitive advantage (Damanpour and Gopalakrishnan) [2].

Product innovation and process innovation are different in three aspects. Firstly, strategic focus of the two are different. Product innovation's target is the market and is customer-driven, while process innovation's focus is to improve tools, devices and knowledges through technologies that take the role of mediation between inputs and outputs. So, process innovation is mostly efficiency-oriented and includes internal activities. Secondly, two innovations are related different business strategies. Differentiation strategy is related to product innovation, while low-cost strategy can be best supported with process innovation. Finally, product and process innovation are associated with different knowledge characteristics. Process innovation is associated with internal and systematic knowledges, but product innovation is related to external autonomous knowledges. Process innovation makes a company possible to develop, maximize, and rearrange its resources and capabilities, and serves as an essential source of its competitive edge. It includes adoption of new production methods, new approaches to management, and new technology that could enhance the production and management processes and contributes to the improvement of organizational efficiency. Process

innovation helps a firm not only develop resources and capabilities, but also recombine and rearrange them.

Based on these concepts related to innovation in general, service innovation is defined as all activities of suggesting, applying and supporting new and creative ideas, new products, and new working processes and methods in an organization's job implementation processes (Keng and Mahmood, 2013)[6]

Den Hertog(2000) classified service innovation into four categories, which includes new service concept, new client interface, new service delivery system, new technological options. As the following research, Den Hertog et al.(2010) added two more categories of service innovation, completing altogether six service innovation types. They are new service concept, new customer interactions, new partners, new revenue producing models, new service delivery system and new technologies

2.2 Service Delivery System

Kelly(2015)[5] classified service delivery system into 2 types. The first type is 'technical' service delivery system, which is highly dependent on facility but has lower dependency on human workforce. Its goal is to get advantage by cost-savings. On the other hand, 'human-oriented' service delivery system is the second type and has lower facility dependency, being dependent on human workforce more, the goal of which is to maximize revenues by providing discriminated and customized services..

Ponsignon(2011)]7 suggested four characteristics of service delivery system: the role of workforce, the role technologies and facilities and the role of location and layout. Furthermore, based on that classification, they classified the types of service delivery system into three, consisting of 'professional service,' 'service shop' and 'service factdory.'

3. Research Hypotheses

Based on literature of previous chapter, this study examines the effects of service innovation on corporate performance and verifies whether technical service delivery system and human-oriented service delivery system have positive moderating effects on the relationship between service innovation and corporate performance with a sample consisting of Chinese companies. The objectives of this study are to confirm following three hypotheses.

Hypothesis 1: Service innovation has a positive effect on corporate performance.

Hypothesis 2: Technical service delivery system has a positive moderating effect on the relationship between service innovation and corporate performance.

Hypothesis 3: Human-oriented service delivery system has a positive moderating effect on the relationship between service innovation and corporate performance.

4. Empirical Analysis Results

To achieve goal of this study, empirical research based on surveys is conducted to 208 companies in 13 big cities in China including Beijing and Shanghai. As for the research design, five survey items for service innovation and another five for corporate performance were questioned to sample companies, while single survey items were questioned for technical and human-oriented service delivery system respectively.

To secure validity and reliability of research constructs, we conducted exploratory factor analysis and Cronbach's alpha test. As the results, all survey items of both service

innovation and corporate performance showed proper loading values over 0.7 and validity of the two constructs were satisfied. Furthermore, the two constructs recorded enough values of Cronbach's alpha test, surpassing 0.6 successfully, meaning the two constructs' reliability are secured.

To test the hypotheses of the study set in previous chapter, regression model analysis and moderate regression model analysis were conducted. The results of following Table 1 supported hypothesis 1, which states that service innovation has positive effect on corporate performance. As Table 1 below indicates, service innovation had a significant effect on corporate performance.

Table 1. Regression Results: Hypothesis 1

variable	coefficient	standard dev.	t value
constant	2.834	0.175	16.199***
service innovation(SI)	0.262	0.043	6.151***
adj. R squared	0.394		
F statistics	37.830**		

***: p<0.001, **p<0.01, *p<0.05

As for hypothesis 2, which states that technical service delivery system has positive moderating effect on the relationship between service innovation and corporate performance, the moderate regression model analysis was conducted. As the result, we found that technical service delivery system has a positive moderating effect on the relationship between service innovation and corporate performance. Therefore, our study can accept hypothesis 2. It implies that a company should pursue service innovation and technical service delivery system simultaneously to improve its performance because the two can create a synergistic effect. The results are depicted in following Table 2.

Table 2. Moderate Regression Results: Hypothesis 2

variable	coefficient	standard dev.	t value
constant	2.819	0.171	16.252***
SI	0.128	0.057	2.236*
SIxTSDS	0.035	0.010	3.429**
adj. R squared	0.448		
F statistics	25.781**		

***: p<0.001, **p<0.01, *p<0.05

In the third stage of the research, hypothesis 3 was examined, which states that human-oriented service delivery system has a positive moderating effect on the relationship between service innovation and corporate performance. The results are depicted in Table 3 below. We followed the same analysis procedures as we did for hypothesis 2 and verified that human-oriented service delivery system does not have a moderating effect on the relationship between service innovation and corporate performance; thereby, rejecting hypothesis 3. This means that a company's efforts for service innovation and taking human-oriented service delivery system do not create a synergistic effect.

Table 3. Moderate Regression Results: Hypothesis 3

variable	coefficient	standard dev.	t value
constant	2.832	0.175	16.185***
SI	0.210	0.067	3.129*
SIxHSDS	0.013	0.102	1.102
adj. R squared	0.399		
F statistics	19.429**		

***: $p<0.001$, **$p<0.01$, *$p<0.05$

5. Conclusion

This study was aimed at checking the effects of service innovation on corporate performance and verifying the presence of a positive moderating effect produced by a company's taking of technical service delivery system and human-oriented service delivery system on the relationship between service innovation and corporate performance.

As such, we conducted an empirical study on a sample of 208 companies located in China. The hypothesis designed for this stated that service innovation has a positive influence on corporate performance. In other words, service innovation has significantly influenced the performance of the Chinese service companies.

In the second step, the study found that technical service delivery system has a positive moderating effect on the relationship between service innovation and corporate performance. The result suggests that if a company wants to boost its performance, it should invest in service innovation and take technical service delivery system as the two can create a synergistic effect.

Furthermore, the study verified that human-oriented service delivery system does not have a moderating effect on the relationship between service innovation and corporate performance, thus implying that there is no synergetic effect between a company's effort in service innovation and taking human-oriented service delivery system.

This study offers an implication to identify the optimal strategic combination of service innovation, technical and human-oriented service delivery system, which has a synergistic effect on corporate performance.

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