An Empirical Study of Organizational Innovation Practice in Electronic and Electrical Industry in the Greater Pearl River Delta (GPRD)

Shui Yee Wong[1†] and Kwai Sang Chin[2]

Department of Manufacturing Engineering and Engineering Management
City University of Hong Kong
Tat Chee Avenue, Kowloon, Hong Kong SAR
E-mails: [1]50270991@student.cityu.edu.hk, [2]mekschin@cityu.edu.hk

Abstract

Innovation fuels organizations evolving them to withstand rapid changes in markets and challenges from competition. While diversified concepts of innovation are examined, a generic framework for managing organizational innovation is established to portray the notion in a methodical approach. Substantiation of the determinants for organizational innovation is carried out in order to examine the framework against the practical situation. Subsequently, expectations and actual accomplishments of the determinants for organizational innovation from the industry are determined so as to understand the industrial view towards the framework. This paper summarizes the empirical findings of a survey of organizational innovation with a sample of 208 electronic and electrical manufacturing companies in the Greater Pearl River Delta (GPRD), China. On one hand, the survey findings confirm the readiness of the generic framework from the practical perspective of the industry. On the other hand, rankings are obtained for the expected importance and company accomplishment of the determinants for organizational innovation, namely in the areas of management leadership and commitment, employee capability and attitude and strategy development for innovation. The improvement area is also verified by the shortcomings of the expectation in comparison to the company accomplishment in each determinant. Meanwhile, it is believed that a directional attitude towards the determinants can facilitate the accomplishment of the determinants of organizational innovation. Further results will be generated from a more in-depth analysis of variables. The confirmed framework will be further developed into an assessment system for organizational innovation with the support of best practices in each determinant.

Key Words: Organizational Innovation, China Manufacturing Industry, Electronic and Electrical Industry, The Greater Pearl River Delta (GPRD)

†Corresponding Author

1. Introduction

While product variety of consumer products has increased dramatically in recent decades, organizations face difficulty in satisfying customers' expectations because of the pressure to advance product requirements (Wheelwright *et al.*, 1992). As an immutable product specification no longer promises a gain in most of the consumable markets, innovation becomes one of the keys in overcoming these challenges (Dess and Picken, 2000). To secure a promising competitive advantage for the company, a continuous and sustainable innovation in an organization is required.

1.1 Project Motivation

As far as the effect of innovation is concerned, a clearer picture for innovation management in an organization is yet to emerge (Damanpour, 1987). However, achieving successful innovation is not simple for most organizations because of the gap between innovation philosophy and daily operations (Patel, 1999). This problem takes place in many organizations (Ahmed, 1998) as innovation being a fragile and vulnerable entity, innately cannot easily be interpreted (Dougherty *et al.*, 1996).

Research has been conducted in order to reveal a better management approach to organizational innovation. Soderquist (Soderquist *et al.*, 1997) proposed three major innovation management approaches in terms of innovation strategy, performance management and coordination and integration. However, this focus failed to describe the whole picture of organizational innovation as it solely emphasized innovation policy management, disregarding the effect of knowledge management and human resources on the organization.

Another view by Souitaris, V. (2002) showed that the rate of technological innovation is affected by competencies in technology, market, human resources and organization itself (Souitaris, 2002). Even though this view addresses the whole picture of a real life situation for most organizations, the focus was pinpointed onto management of technological innovation rather than organizational innovation. As well, the management of knowledge flow within an organization was absent.

Although the measurement of organizational innovation has been addressed (Guimaraes *et al.*, 1994; North *et al.*, 2000), its fulfillment is yet to be observed by most of the empirical research. Their works only substituted the inadequacies of innovation theories in one or some characteristics (Wang *et al*, 2004), or in other words, a complete overview of the consolidated theories for organizational innovation has not yet been undertaken.

1.2 Definition of Innovation

Conceptually, innovation is a mindset, a pervasive attitude and a way of thinking that fo-

cuses beyond existing market needs (Ravichandran, 2000). From the organizational perspective, it is an intermediate stage or milestone in the process of change.

Meanwhile, the idea of administrative innovation and technological innovation as well as the idea of process and product innovation has been classified. Indeed, innovation is either a new product, a new service, a new technology, a new administrative practice (Hage, 1999), or a mix of them all (Damanpour, 1991). A more centralized concept of innovation towards organization in this project is adopted, i.e. organizational innovation. Organizational innovation is defined as the adoption of a new idea or behaviour that is new to the organization (Kramer *et al.*, 2003; Damanpour, 1991; Jung *et al.*, 2003). It is viewed as the creation, development and introduction of attributes that may be new products, services, procedure or processes that are beneficial to the entire organization (Birchall *et al.*, 1996). Knight (1967) identified the boundary of innovation which does not have to be totally new to the world, instead new to the industry is enough (Knight, 1967).

Based on these notions, organizational innovation in this project is defined as the adoption of an idea or behavior that is new to the whole organization or to the relevant market. It is the actualization of technology or new administrative practices in terms of new products that include tangible products and intangible services or new processes that include direct processes and support operations in an organization. New technology can either already exist or be newly developed, whereas new administrative practices can involve the actualization of new ideas into actual operations.

1.3 Project Aim and Objectives

This paper attempts to confirm the readiness of the generic framework for organizational innovation and understand the relationships between the expected importance and company accomplishment of the determinants in the framework, especially for the electronic and electrical industry in the Greater Pearl River Delta (GPRD) in China.

After reviewing the diversified concepts of innovation, a generic framework for managing organizational innovation with multi-level criteria is established to portray the notion of organizational innovation using a methodical approach. Through the development of a questionnaire, the research questions in terms of verification of the generic framework and the determination of the relationships between expectation and accomplishment towards the determinants are examined.

The descriptive rankings of expected importance and company accomplishment highlight the relationships between expectation and accomplishment of organizational innovation. An attempt is also made to expose the gap between the company's expectation and the corresponding accomplishment for each of the factor and their corresponding correlations.

2. Scope of Project

2.1 Targeted Industry

Because of the 1.3 billion population, with total retail sales reaching US$ 553.6 billion in 2003, in China, more than 90% of multinational companies rate the Chinese market as very important in positioning their global business strategy (TDC Research, 2004). Meanwhile, the relatively cheap labour and low operational costs have provided an excellent foundation for Mainland China to become the "Factory of the World".

Significant transformation of economic activities has taken place in Hong Kong since 1980's. In recent decades, Hong Kong's manufacturing industry has declined substantially compared with its service industry, in terms of percentage of employment and their contribution to GDP. With China's open-up policy, Hong Kong transformed from an industrialized city to a manufacturing support services centre. In addition to its relocation of manufacturing activities to Mainland China, Hong Kong nowadays plays an increasing role as an intermediary for trade between Mainland China and the world market. Many foreign companies select Hong Kong as a showcase for advertising and marketing their products to mainland consumers. Meanwhile, with its exceptional strategic position, its role in company licensing and agency business for Mainland China has been established.

On the other hand, the region of the Pearl River Delta (PRD) has become a worldwide renowned manufacturing center. Many leading international brands, such as Nokia, Siemens, LG, Matsushita, Sanyo, Sony, etc., have their production facilities in the Pearl River Delta (PRD). Until mid-2004, 404 out of the world's top 500 companies, many of which are international leaders with advancing technology in their respective industries, have invested in the Pearl River Delta (PRD). The production capabilities in the Pearl River Delta (PRD) are particularly strong in the electronics and household appliance businesses, holding 26.7% and 34.9% of the share of national totals respectively.

The Greater Pearl River Delta (GPRD), comprising 11 cities including Hong Kong, Macau and nine cities in the Pearl River Delta (PRD) region, has a combined population of 50 million and GDP of US$302.2 billion, accounting for 18% of the national total in 2003 (including Hong Kong and Macau). (TDC Research, 2004) With the synergy effect from Hong Kong and the Pearl River Delta (PRD), the Greater Pearl River Delta (GPRD) has become an exceptionally important trading platform for foreign companies to explore the Chinese market. The impact of organizational innovation in this region is therefore investigated. Companies in the electronic and electrical industry in the Greater Pearl River Delta (GPRD) with headquarters or a regional office located in Hong Kong are regarded as the targeted industry for justifying the research questions.

3. Theoretical Background and Hypotheses

3.1 A Model of Organizational Innovation

As a well-proven theory for organizational innovation has not yet been achieved, a bridge for connecting the segregated theories with the reality is developed. An integrated framework for organizational innovation has been identified in this project. Chin and Wong (2004) divided the critical success factors for organizational innovation into four major perspectives (Chin *et al.*, 2004; Wong *et al.*, 2005). This conceptual framework was further developed based on the established infrastructure. The generic framework in this project consists of three perspectives, namely organizational infrastructure, innovation policy management and knowledge management. The general idea for the categorization of the sections and their sub-criteria for hierarchy were discussed (Chin, *et al.*, 2005) and in the following paragraphs, these issues are briefly elaborated on.

Organizational infrastructure, which is a crucial component for an innovative organization, is developed. It embraces the common values, beliefs and fundamentals of an organization. Organizational culture and belief, structural dimension and the competence of human resources are the essential elements in this perspective. The establishment of this perspective, in fact is based on the empirical findings from literature.

Scholars in innovation management have discovered that the characteristics of companies affect the performance of organizational innovation (Kakati, 2003). Innovation should be fostered under company wide culture (Clegg, 1999), whereas other corporate culture in terms of human resource focus (Martins *et al.*, 2003), a free environment (Mumford *et al.*, 2002) and learning opportunities (Bhatt, 2000) are also essential for organizations, as an appropriate culture which values its employees facilitates employees' to think beyond their current boundaries (Cook, 1998; Feldman, 1988; Harborne *et al.*, 2003). On the other hand, a favorable organizational structure in terms of their complexity and formality facilitates organizational communication which is one of the key sources of a fruitful concept (Conceicao *et al.*, 2001; Tang, 1998). Moreover, competences of management (Jung *et al.*, 2003; Mumford *et al.*, 2004) and employees (Mumford *et al.*, 2002) play an important role for organizational innovation.

Innovation policy management stresses the strategic process for developing, deploying and directing management processes towards innovation. This perspective emphasizes the administrative process regarding the strategy for innovation and the support mechanisms for innovation that influence organizational innovation. This view addresses the organizational width of vision and direction and even the realization and implementation of top-level strategy.

A directional innovation development and deployment of strategy is one of the three main

management approaches that support the achievement of innovation (Soderquist *et al.*, 1997). In addition, a support mechanism of reward and recognition, resource management (Martins *et al.*, 2003) and a mechanism of continuous improvement facilitate creativity and innovation.

Considering that a knowledge base is the ultimate source of most innovation, knowledge management perspective addresses the processing cycle of knowledge and information. This perspective describes how the flow of knowledge and information, through the stages of development, acquisition, dissemination and eventually accumulation, influences organizational innovation.

Management of information and knowledge which encompasses processes and practices concerned with the creation, acquisition, capture, sharing and use of knowledge, skills and expertise (Swan *et al.*, 1999) are well recognized as key sources of innovation. In-house knowledge development (Hamel *et al.*, 2003), accessibility of external sources of knowledge and organizational knowledge transfer (Hemmert, 2004) uphold organizational innovation, whereas continuous flows of information and reliable knowledge bases establish the foundation of innovation (Perez-Bustamante, 1999).

3.2 Research Questions

As the generic framework for organizational innovation is developed with the support of empirical research, the first research question addresses the readiness of the framework in the practical circumstance. The ranking of the expected importance and company accomplishment in the determinants for organizational innovation in the targeted industry in the Greater Pearl River Delta (GPRD) is the second question. The third question investigates the improvement areas from the expectation and accomplishment of the determinants in the industry. Finally, the fourth question examines the relationship between expectation and accomplishment.

4. Research Methodology

4.1 Design of Questionnaire

The questionnaire contains three parts. The first part gathers companies' background information. The second part rates their expected importance and accomplishment based on the pre-defined determinants of organizational innovation and the third part evaluates their performance in organizational innovation.

Companies are profiled in relation to their headquarters, R&D centers and production plants, type of ownership (National Bureau of Statistic of China, 2003), operational mode (TDC Research, 2000), major products, number of employees, and figures on educational

levels of management and R&D staff (TDC Research, 2004). This part categorizes the respondent companies and as a result facilitates further analysis.

The identified determinants in the theoretical framework are displayed in the second part as factors influencing organizational innovation. This section has two main focuses. The first is to obtain the rating of importance in relation to the determinants and the second is to rate the company accomplishment in each of the determinant areas.

A two-score measurement in expected importance and company accomplishment towards the determinants is developed, as shown in Figure 1. The first score evaluates the factor importance and the second ranks the companies' actual accomplishments on the determinants. A 7-point itemized rating scale is adopted in part 2. (Sekaran, 2003) In addition, items under NI (Not Important) and NA (Not Applicable) are found in the ratings for factor importance and company accomplishment respectively. The responding companies can select them if they believe that the evaluated determinant is totally unimportant for organizational innovation or if it is not applicable to their particular situation.

Factor Importance	
NI	*Weak* ◄——► *Strong*
0	1 2 3 4 5 6 7

Company Accomplishment	
NA	*Low* ◄——► *High*
0	1 2 3 4 5 6 7

Figure 1. Two-score measurement

By reviewing the company situation using performance indicators of organizational innovation, the extent of their performance can be determined. Generation of innovation (Nobelius, 2004), positioning for innovation (Caputo *et al.*, 2002) and some performance indicators for organizational innovation including number of product changed to total product (Lee *et al.*, 2003), change in sales (due to product change) to total sales, change in profit (due to product change) to total profit (OECD, 1997), number of processes changed to total processes, change in overall productivity due to product changes, percentage of expenditure on R&D expenditure to total sales (Jung *et al.*, 2003), number of technologies adopted externally (Brandyberry, 2003) and number of patents developed internally (Kivimaki *et al.*, 2000) are included.

Objective numerical results of actual achievement and subjective judgments in performance

satisfaction level for the performance indicators are obtained. Afterwards, the degree of benefit and areas for improvement in organizational innovation are evaluated. A 7-point itemized rating scale on a balanced rating scale with a neutral point is adopted for the judgments. (Sekaran, 2003) In order to collect information in the Greater Pearl River Delta (GPRD), the questionnaire is translated into English, traditional Chinese and simplified Chinese versions.

4.2 Data Collection

According to the statistical report of the Census and Statistics Department of Hong Kong Special Administrative Region, the total number of establishments among all the manufacturing industries was 15,748 up to Dec, 2004 (Census and Statistics Department, 2004). The targeted industry for this project is further narrowed down into the electronic and electrical companies with (1) Number of staff outside Hong Kong > 500 or (2) Number of staff in Hong Kong > 50. The selection criteria were developed as the research is looking for more comprehensive data from the industry as companies with too small in size may not be able to represent the general picture of the industry.

A target of at least 200 respondents were sought in order to gain a 95% confidence level, $p = 0.5$ and a +/- 7% precision level (Israel, 1992) from the industry if an optimistic estimation of the number of establishments in the industry has taken into account. Questionnaires were sent by mail survey or web survey to 2,142 manufacturing companies in the industry. A web based electronic questionnaire was developed, so as to facilitate the communication of the survey among different areas in the Greater Pearl River Delta (GPRD).

In order to minimize the potential risks of receiving undesirable data from the online electronic questionnaire, preventative measures for ensuring the cleanness of data were carried out.

The web link was strictly sent to the targeted companies only. Then, the identity of replied entries was checked with the databases for the targeted companies that were obtained from the archive in the Hong Kong Directory at "hkenterprise.com" on TDC's Cyber Marketplace from the Hong Kong Trade Development Council (Hong Kong Directory, 2005). As a result, by confirming their company identity, all the replies originated from the targeted companies. Double submission was not allowed and was eliminated by the checking process. Therefore, the potential risk of research errors was minimized. The adoption of preventative procedures reduces the errors from the web questionnaire. As well, a better functionality of the web questionnaire was evident when compared with a mail questionnaire because it facilitates communication in terms of submission and accessibility.

This paper summarizes the empirical findings of a survey of organizational innovation with a sample of 208 electronic and electrical manufacturing companies in the Greater Pearl River Delta (GPRD) in 2005. A summary of the survey features is listed in Table 1.

Table 1. Survey Features

Objective population	< 15,748 (Census and Statistic Department, 2004)
Geographical basis	The region of Greater Pearl River Delta (GPRD) in China with headquarters or regional offices located in Hong Kong
Industry	The electronic and electrical industry
Analysis Unit	Enterprise
Collection method	Mail and online survey
Selection criteria	◦ Number of staff outside Hong Kong > 500, or ◦ Number of staff in Hong Kong > 50
No. of contacted companies	2,142 (Hong Kong Directory, 2005)
Sample size	208 manufacturing companies
Confidence level	95% confidence level, p = 0.5 and a +/- 7% precision level (Israel, 1992)
Duration of study	2005
Respondent	Mainly directors, departmental managers, senior engineers···etc.

4.3 Validity of Measures

Construct validity measures the resulting numerical values that accurately represent the subject (Schwab, 2005). It is to determine the appropriateness of the measuring instrument, or in other words, to ensure the instrument is able to measure the concept that is established. Content validity and convergent validity are examined in this regard.

Content validity ensures the instrument adequately measures the concept. As revealed by Sekaran, a careful review of literature and a panel of judges can attest to the content validity of the instrument (Sekaran, 2003). Six experienced advisers from both industry and the academic arena, therefore, participated in the pilot of the project. Three were professors in the field of innovation management in Hong Kong and China. Two were completing Engineering Doctorate Degrees with more than ten years' of solid experience in the industry and had a solid background in dealing with changes from innovative organization. One of them had more than 20 years' solid experience in consultancy work with manufacturing industries, particularly in the Greater Pearl River Delta (GPRD).

Factor analysis is adopted to examine the validity of constructs. The construct validity of the determinants is examined by gathering the factors into three groups (1: organizational infrastructure, 2: innovation policy management and 3: knowledge management). From Table 2, the result illustrates that the factor loadings in each group are largely confirmed with the recommended minimum 0.7 (between 0.664 and 0.903).

The categorization can be substantiated into three groups. They are group 1: organizational infrastructure (culture for innovation, other corporate culture, structural complexity, distance of power, management leadership and commitment and employee capability and attitude), group 2: innovation policy management (strategy development for innovation, strategy deploy-

ment for innovation, mechanism of resource management, mechanism of recognition & tolerance and mechanism for continuous improvement) and group 3: knowledge management (internal knowledge development, external knowledge acquisition & exchange, organizational learning, knowledge communication & utilization and knowledge accumulation).

Table 2. Factor loadings in each group (1: organizational infrastructure, 2: innovation policy management and 3: knowledge management)

Variables	1	2	3
Culture for Innovation	0.712		
Other Corporate Culture	0.778		
Structural Complexity	0.712		
Distance of Power	0.664		
Management Leadership and Commitment	0.809		
Employee Capability and Attitude	0.789		
Strategy Development for Innovation		0.853	
Strategy Deployment for Innovation		0.880	
Mechanism of Resource Management		0.868	
Mechanism of Recognition & Tolerance		0.807	
Mechanism for Continuous Improvement		0.813	
Internal Knowledge Development			0.823
External Knowledge Acquisition & Exchange			0.856
Organizational Learning			0.852
Knowledge Communication & Utilization			0.903
Knowledge Accumulation			0.860

4.4 Reliability of Measures

The reliability of measures indicates the extent to which the measurements are error free (i.e. without bias) and hence ensures consistent measurement across various items in the instrument. In the other words, the reliability of measure is an indication of the stability and consistency with which the instrument measures the concept and helps to assess the "goodness" of a measure (Sekaran, 2003).

Since two data collection methods were adopted, analysis is carried out in order to confirm the readiness of data in different methods. The stability of measures is examined by a t-test analysis with respect to testifying to the instrumentation effect (Zikmund, 2000).

Although the past research has shown that minimal differences between collecting data from web and mail survey modes (McCabe *et al.*, 2006), the verification of the result from two methods are still carried on in order to eliminate any potential bias from different meth-

ods in this research. Two sets of hypotheses are defined. H1(0): the mean of factor importance in each determinant are equal for mail and web responses. H2(0): the mean of company accomplishment in each determinant are equal for mail and web responses. The result is shown in Table 3. As equal variance is assumed from the result of Levene's test and all the $p > 0.05$ from the t-test result, we do not reject both H1(0) and H2(0). They imply that with the support of the preventive procedures, the mail and web page responses are equal with no effect resulting from the different data collection methods.

Table 3. T-test result of two data collection methods

Variables	Factor Importance		Company Accomplishment	
	t-value	Sig.	t-value	Sig.
Organizational Infrastructure				
Culture for Innovation	0.062	0.095	0.338	0.736
Other Corporate Culture	-1.270	0.206	0.114	0.909
Structural Complexity	-0.889	0.375	0.430	0.667
Distance of Power	0.154	0.878	0.712	0.477
Management Leadership and Commitment	0.828	0.409	0.841	0.401
Employee Capability and Attitude	-0.071	0.943	0.000	1.000
Innovation Policy Management				
Strategy Development for Innovation	-0.608	0.544	-0.698	0.486
Strategy Deployment for Innovation	-0.069	0.945	0.06	0.952
Mechanism of Resource Management	-1.383	0.168	0.031	0.975
Mechanism of Recognition & Tolerance	-0.310	0.757	0.140	0.889
Mechanism for Continuous Improvement	-0.937	0.350	0.000	1.000
Knowledge Management				
Internal Knowledge Development	-0.944	0.346	0.454	0.651
External Knowledge Acquisition & Exchange	0.015	0.988	0.967	0.335
Organizational Learning	-0.978	0.329	-0.164	0.870
Knowledge Communication & Utilization	-0.765	0.445	0.005	0.996
Knowledge Accumulation	-0.240	0.811	-0.311	+0.756

Note) From the result of Levene's test, equal variance is assumed.

Consistency of measures can be examined through inter-item consistency reliability. It is a test of the consistency of the respondents' answers to all the items in a measurement. Cronbach's alpha is considered to be an adequate index of the inter-item consistency reliability in this study. Cronbach's alpha, which determines how well a set of items measures a single uni-directional latent construct, is examined. From Table 4, the alpha coefficient in this study is between 0.8347 and 0.9087. Normally, the coefficient with more than 0.7 is regarded as a good measure (Sekaran, 2003).

Table 4. Cronbach's alpha coefficient

Scale	Cronbach's alpha coefficient
Organizational Infrastructure (six items)	0.8347
Innovation Policy Management (five items)	0.8991
Knowledge Management (five items)	0.9087

5. Results

5.1 Confirmation of the Importance of Determinants Towards Organizational Innovation

From the mean and standard deviation of factor importance in Table 5, all the mean values are greater than 5. The result verifies the first research question that the sixteen determinants are important factors of organizational innovation in the industry. While the development of the framework is mostly from the literature of organizational innovation in other countries, this result confirms that the framework is practically adoptable for the manufacturing industry in the Greater Pearl River Delta (GPRD). Future research directions for organizational innovation in China, therefore, can be supported by the confirmed determinants.

5.2 Rankings of Factor Importance and Company Accomplishment

The second research question can be answered by the means and standard deviations in factor importance and company accomplishment in the determinants as shown in Table 5. The mean of factor importance in management leadership and commitment is 5.99 (S.D. = 1.063), indicating that this factor is the most important in the opinion of the industry. The next four important factors are employee capability and attitude, strategy development for innovation, internal knowledge development and external knowledge acquisition and exchange. The result shows that the human resources related factors (management leadership and commitment and employee capability and attitude) are important. Meanwhile, a directional innovation strategy is essential and knowledge development factors (internal knowledge development and external knowledge acquisition and exchange) are also necessary.

On the other hand, the best-accomplished determinant is also management leadership and commitment (mean: 4.46; S.D. = 1.379). Employee capability and attitude is of second rank to company accomplishment. Structural complexity, strategy development for innovation, mechanisms for continuous improvement and external knowledge acquisition and exchange are in third place. The result shows that the human resources related factors (management leadership and commitment and employee capability and attitude) have a higher accomplishment, as the quality of human resources is relatively easy to achieve by receiving education.

Moreover, it may be due to the higher expectation of the factors that influence the actual achievement rates. The accomplishment in organizational structure and continuous improvement are also high because a systematic arrangement and a well-defined mechanism for the organization are also relatively easy to achieve.

From the results of the expected importance and the company accomplishment of organizational innovation, future research directions and corporation plans can be directed in the manufacturing industry in the Greater Pearl River Delta (GPRD) by referring the corresponding priorities of determinants.

5.3 Gaps between Expectation and Accomplishment

From Table 5, statistically significant differences ($P < 0.001$) between expected factor importance and company accomplishment are obtained from the industry. Therefore, the third research question is confirmed as the distance between expected importance and accomplishments in each determinant of organizational innovation is revealed. The result implies that

Table 5. Means, standard deviations, pair-samples t-test

Variables	Factor Importance		Company Accomplishment		Pair-Samples t-Test
	Mean	S. D.	Mean	S. D.	
Organizational Infrastructure					
Culture for Innovation	5.63	1.283	4.06	1.420	14.79***
Other Corporate Culture	5.34	1.294	4.04	1.403	13.98***
Structural Complexity	5.42	1.260	4.27	1.486	10.38***
Distance of Power	5.33	1.301	4.20	1.460	11.20***
Management Leadership and Commitment	5.99	1.063	4.46	1.379	15.31***
Employee Capability and Attitude	5.82	1.119	4.37	1.330	13.70***
Innovation Policy Management					
Strategy Development for Innovation	5.78	1.183	4.27	1.374	14.48***
Strategy Deployment for Innovation	5.51	1.155	3.95	1.325	14.67***
Mechanism of Resource Management	5.43	1.131	4.10	1.287	13.01***
Mechanism of Recognition & Tolerance	5.46	1.158	4.14	1.426	13.16***
Mechanism for Continuous Improvement	5.70	1.111	4.27	1.433	13.20***
Knowledge Management					
Internal Knowledge Development	5.72	1.085	4.21	1.449	13.74***
External Knowledge Acquisition & Exchange	5.71	1.122	4.27	1.307	14.28***
Organizational Learning	5.46	1.356	4.01	1.462	12.87***
Knowledge Communication & Utilization	5.39	1.163	4.08	1.341	12.20***
Knowledge Accumulation	5.56	1.316	4.10	1.517	12.97***

Note) Sample size; n = 208; S. D. Standard Deviation, ***$p < 0.001$ (two tail)

the anticipated accomplishment of organizational innovation has not yet been achieved and improvement area is evident in reality. Or in other words, a comprehensive assessment system for organizational innovation is needed in order to narrow the gap between actual accomplishment and expectation.

5.4 Positive Relationship between Factor Importance and Company Accomplishment

Significant ($p < 0.001$) positive relationships between each pair of determinants of factor importance and company accomplishment are found in Table 6. The result confirms the fourth research question that the expectation of each determinant positively correlates with

Table 6. Correlations between factor importance and company accomplishment with respect to each determinant

Items in Factor Importance	Company Accomplishment					
	1	2	3	4	5	6
Organizational Infrastructure						
1. Culture for Innovation	0.365***					
2. Other Corporate Culture		0.506***				
3. Structural Complexity			0.328***			
4. Distance of Power				0.450***		
5. Management Leadership and Commitment					0.323***	
6. Employee Capability and Attitude						0.230***

Items in Factor Importance	Company Accomplishment				
	7	8	9	10	11
Innovation Policy Management					
7. Strategy Development for Innovation	0.316***				
8. Strategy Deployment for Innovation		0.243***			
9. Mechanism of Resource Management			0.265***		
10. Mechanism of Recognition & Tolerance				0.391***	
11. Mechanism for Continuous Improvement					0.263***

Items in Factor Importance	Company Accomplishment				
	12	13	14	15	16
Knowledge Management					
12. Internal Knowledge Development	0.252***				
13. External Knowledge Acquisition & Exchange		0.292***			
14. Organizational Learning			0.347***		
15. Knowledge Communication & Utilization				0.243***	
16. Knowledge Accumulation					0.356***

Note) ***$p < 0.001$ (two tail)

the accomplishment of the corresponding determinant. It infers that companies with greater accomplishment of a determinant are aware of the corresponding determinant and they are more directional for organizational innovation. Accordingly, for enhancing the accomplishment of organizational innovation for the industry, boosting their awareness towards the determinants of organizational innovation can be one of the possible solutions. Furthermore, the dissemination and communication of the determinants are required, for instance by the mean of quick evaluation platform and comprehensive assessment.

6. Conclusion and Future Works

To conclude, the four research questions are examined accordingly. On one hand, the survey findings confirm the readiness for the generic framework in the practical situation in the manufacturing industry in the Greater Pearl River Delta (GPRD). On the other hand, it obtains the top rankings of expected importance and company accomplishment for the determinants of organizational innovation, namely management leadership and commitment, employee capability and attitude and strategy development for innovation. The distance between the expectation and company accomplishment in each determinant verifies the improvement area in reality. Finally, it is believed that a directional attitude towards the determinants can facilitate the accomplishment of the determinants of organizational innovation.

Further results will be generated from a more in-depth analysis among variables. In addition to the comparison of factor importance and company accomplishment, the effect of a different geographical area, operational mode, ownership, size of company, levels of education and performance indicators will be examined. Furthermore, the confirmed framework will be developed to an assessment system for organizational innovation with the support of best practices in the industry.

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