

Service Innovation in Small and Medium Enterprises in Singapore

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Submitted to Lee Kong Chian School of Business in
partial fulfillment of the requirements for the Degree
of Master Of Science in Management

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2011

ABSTRACT

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By means of employing surveys and quantitative empirical research methods, this paper has set out to understand the antecedents to SMEs intention to innovate in services within the Singapore context.

Internal organisational factors such as organisational learning, mission and the firm's innovation experience were found to have an effect on the firm's intention to innovate, and when factored with the moderating effects of the environmental factors such as availability of external funding and societal expectations, several interesting findings emerged.

These findings would be of consequence to the top managers of SMEs and researchers alike, in an effort to understand the behavior of SMEs in the domain of innovation in services.

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ACKNOWLEDGEMENTS

I would like to thank the professors in my thesis committee, Associate Professor Gilbert Tan, and Assistant Professor Burkhard Schrage for their unwavering patience. I would also like to thank Professor Yang Kum Khiong for his support and Ms Shelly Li for her kind help.

I must thank Assistant Prof Yoo So-jin, a professor who taught me a module on entrepreneurship that sparked my interest in studying this multifaceted creature called entrepreneurs. Though Prof Yoo taught me only one module, his encouraging influence and invaluable help has gone way beyond just a module.

Finally, the completion of this paper would not have been possible without the constant, consistent and patient guidance and encouragement showered by Associate Professor Tan Wee Liang. He has been and always will be an inspiring educator and driver towards this journey to complete this thesis.

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Chapter 1: Introduction

In the past, many companies have traditionally focused on competing on product design and manufacturing breakthroughs which brought about cost-savings and superior product satisfaction. In doing so, these companies have often overlooked a vast area of opportunity which has now evolved to be an increasing domain of competitive advantage-service innovation. In the later part of the earlier two decades, academics and business leaders have been advocating the importance of service innovation as a significant and strategic tool for any companies which intends to create sustainable growth. Berry et al., 2006; Bryson and Monnoyer (2004), de Jong et al.(2003), Lu, Lin and Wu (2005), Matear, Gray and Garrett (2004), Miles (2005), Tidd and Hull (2003), have agreed that service innovation is important for the success of both types of firms, service and manufacturing, both in the short- and long-haul.

Examples of successful service companies are aplenty such as Singapore Airlines, Google and there are even a number of rising ‘service-converts’- traditional product-innovative companies such as IBM, Apple and Rolls-Royce have profitably transitioned their businesses from simply selling engines to leasing it to airlines as a form of service innovation.

The nature of services is such that it is intangible, inseparable, heterogeneous and perishable (Bitner, Fisk and Brown, 1993) as such for the service-cynical, their beef with services has always been that services are highly complex and differentiated in nature, unlike

traditional manufacturing products which makes it difficult to identify, measure and account for a company's success (de Jong et al., 2003). It seems that service has always been relegated to an after-thought, and thus commanded little attention; this is changing as more and more companies have shown that service innovation can be successful and the benefits, significant. In addition, as the competition for customers heats up, companies are beginning to realise that their customers are becoming more discerning and they are interested not only in the product but in service as well, which makes up the entire customer experience. Thus, the astute firm's focus has been shifting from manufacturing to technological innovation to one of service innovation.

1.1 Background on SMEs in Singapore

The service sector is one of the two engines of growth in Singapore and has steadily been growing to make up for over two thirds of her yearly GDP between 2007 and 2010, despite a recession in 2009¹.

Being one pillar of Singapore's economy, these 154,000 small and medium enterprises (SMEs) accounts for over 99% of business establishments² and employs six out of ten workers in the population.

SPRING Singapore's definition of a SME:

A company with an annual sales turnover of not more than S\$100 million or an employment size not more than 200 workers.

¹ Source: Department of Statistics of Singapore. <http://www.singstat.gov.sg/stats/latestdata.html>

² <http://app.mti.gov.sg/default.asp?id=148&articleID=24462>

Despite being a key pillar of Singapore's economy, the SMEs only have a value-added contribution of 16% and its overall productivity is about half that of the national average. Therefore, there is potential for the SMEs to grow more by achieving higher productivity and in turn, strengthening their long-term competitiveness.

In a way, the SMEs suffer from the underdog syndrome where companies and people would prefer to deal with more established multi-national companies (MNCs) than the average SME. The SMEs should however, learn from the Japanese in the automotive industry and strive to be the best in whatever they do. It is clear that stable and large financial resources of the MNCs do put the SME at a disadvantage, so one possible way is to create a niche by engaging in service innovation. Berry et al. (2006), Jong et al. (2003), Lu, Lin and Wu (2005), Matear, Gray and Garrett (2004), Miles (2005), have suggested that service innovation is the way to go regardless of the type of firm.

1.2 Research Objective

Over the last two decades, the growth in the collection on service innovation literature commensurate with the important fact that services accounts for over 75% of the wealth and over 85% of employment in most developed economies (Bessant & Tidd, 2007). Amazingly, as the collection grows, the authors still cannot agree on one definition for service innovation, which brings about the question how do firms in the business of service innovation distinguish themselves?

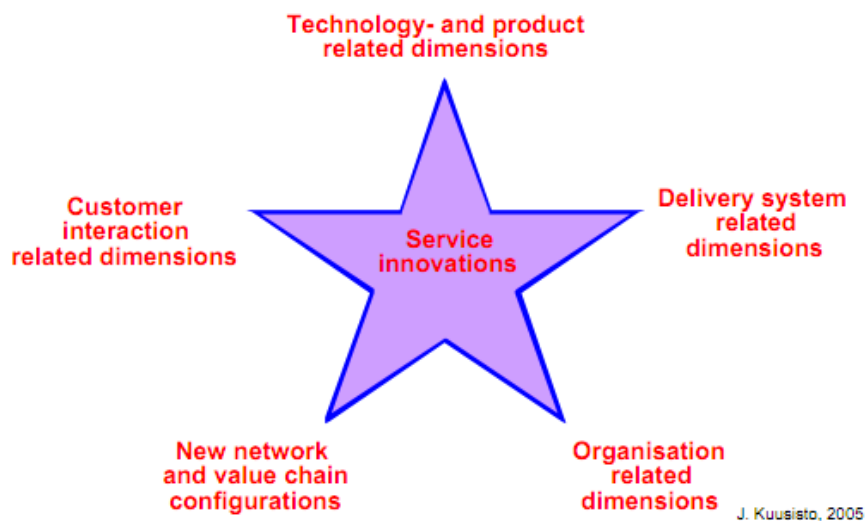
In addition, this growing literature's focus on the Western businesses seems to demonstrate that only the Western countries have bothered to understand the mechanics of their own service economy. In addition, most literature is based on case studies and is

focused on large multinational corporations. Limited literature is available about what drives service innovation in the Asian context, and it becomes increasingly sparse when the topic focuses on a small nation like Singapore and even more unheard of with a spotlight on small and medium enterprises (SMEs).

This thesis therefore aims to plug the gap by reporting a study into the factors that influence service innovation in the SMEs in Singapore. This paper focuses only on service innovation in part due to its newness and growing importance and views service innovation as a form of entrepreneurship.

Chapter 2: Previous Research and Hypotheses Development

Peter Drucker (1954) described that an enterprise only has two functions innovating and the other marketing. Service innovation literature evolved from the 1970s (Droego et al. 2009) where researchers were more interested about innovation-related to technology before they went on to argue that the service innovation was a supplier-led industry and it stems from the manufacturing domain (Pavitt, 1984, Barra, 1986). In the late 1990s, researchers went on to define service innovation as everything else that product innovation was not, which in actual fact, skirted the most fundamental question on what exactly defines service innovation. As service innovation becomes more difficult to define, perhaps the diagram can illustrate the different types of service innovations:



In the private sector where profit is a dominant motive, innovativeness has been associated with superior organisational performance (Deshpande, Farley, & Webster, 1993) and an organisation's capacity for innovation (Hurley & Hult, 1998). In turn, innovation is linked positively to organisational performance (Fiol & Lyles, 1985; Han, Kim, & Srivastava, 1998). Though much has been written about organisation and management of new product development in the manufacturing sectors, little is known about how much of these theories

can be applied to the service sector (Miles, 2000; Tidd et al., 2001). The reason being, the analysis of innovation in the services industry is difficult because innovation theory has been developed essentially on the basis of analysing *technological* innovation in *manufacturing* activities (Galouj and Weisntein, 1997). This stand was also supported by Holbrook (2003) who cited that many innovation studies and surveys were mostly developed and tested on manufacturing industries (such as the Oslo Manual), where most innovation is supposed to occur.

So, what is innovation? According to Rogers (1962), an innovation is “an idea perceived as new by the individual”, and Drucker adds a spin to this definition by adding the dimension of performance to an innovation by terming it a “change that creates a new dimension of performance”.

According to the UK Innovation Survey CIS4³, an innovation is defined as: “Major changes aimed at enhancing your competitive position, your performance, your know-how or your capabilities for future enhancements. These can be new or significantly improved goods, services or processes for making or providing them. It includes spending on innovation activities, for example on machinery and equipment, research and development, training, goods and service design or marketing.”

OSLO Manual’s definition⁴ of an innovation adds the dimension that an innovation must at the basic level, be new to the firm:

“An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations. The minimum requirement for an innovation is that the product, process, marketing method or organisational method must be new (or significantly improved) to the firm.

³ <http://www.bis.gov.uk/assets/biscore/corporate/migratedd/publications/f/file9688.pdf>

⁴ http://www.global-innovation.net/innovation/Innovation_Definitions.pdf

Organisations must adapt as the market and environment change or face the eventuality of failing. Organisations can choose to adapt in the form of developing or adopting innovations which in nature, can be radical or incremental, (Chandy & Tellis, 1998; Ettlie, Bridges, & O'Keefe, 1984), technical or administrative (Han et al., 1998). Some studies draw a distinction in term of the magnitude of innovations, referring to innovations as incremental versus radical (Abernathy, 1978), and incremental versus breakthrough innovations (Tushman and Anderson, 1986). The act of innovating has been linked to a few factors such as in reaction to competitors or a conscious decision to actively pursue innovativeness (Hunt, 2000).

2.1 Definition of Service Innovation

Most authors have chosen to state that service innovation is everything that product innovation is not which does not provide a boundary to the term (Martin and Horne, 1993; Miles 2000; Berry et. al. 2006). In some literature, service innovation is also interchangeably referred to as “innovation in services” (Barras, 1986; Hipp and Tether, 2000). Due to the specific properties of service and its activities, particularly the analytically 'fuzzy' nature of their output (service), it had been rather difficult to measure service innovations by the traditional economic methods (productivity) and to detect improvement or change (on the qualitative level) caused by service innovation.

According to Tekes (Finnish Funding Agency for Technology and Innovation)⁵

“Service innovation is a new or significantly improved service concept that is taken into practice. It can be for example a new customer interaction channel, a distribution system or a technological concept or a combination of them. A service innovation always includes replicable elements that can be identified and systematically

⁵ Tekes is the main government financing and expert organisation for research and technological development in Finland, one of the research-intensive countries in the world.

reproduced in other cases or environments. The replicable element can be the service outcome or the service process as such or a part of them. A service innovation benefits both the service producer and customers and it improves its developer's competitive edge⁶."

For the purpose of this thesis, the following definition of service innovation is adapted from the Oslo Manual: "Introduction of a service that is new or significantly improved with respect to its characteristics or intended use. This includes significant improvements in technical specifications, components, incorporated software, user friendliness or other functional characteristics"

2.2 Hypotheses Development

Citing the theory of planned behavior (Ajzen 1991; Krueger and Brazeal 1994; Krueger, Reilly and Carsrud 2000; Begley and Tan 2001), authors have suggested entrepreneurship intentions influence future actions. Krueger (2000) posits that the organisation's members perceptions channeled through intentions can either hinder or enhance the identification and pursuit of new opportunities, and those elements of a cognitive infrastructure need to be present. According to Ajzen's theory of planned behavior (1991), the antecedents of intentions and attitudes serve to precipitate the intentions into behavior (Krueger and Brazeal 1994; Krueger, Reilly and Carsrud 2000). Hence, a firm is more likely to act if they have a positive intention to innovate.

The way an organisation learns is of great importance in a volatile environment as the global competition proliferates due to shortening of product life cycles, the need to value-add better than your competitors, and the never-ending race to maximize limited economic

⁶ This definition is used in Tekes' Serve program, which targets to increase and broaden the services development of the Finnish industry and to promote academic research in service related areas.

resources, all while watching the firm's bottom-line and return to investors. Swee and Richards (1997) posited that learners who are faster in this environment will therefore earn an advantage in being ahead of the rest of the market by finding more ways to advance with better working process, and innovations in product and service developments.

Garvin (1993) defined learning organisation as: "an organisation skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect knowledge and insights." He stated that "new ideas are essential if learning is to take place, and whatever the sources, these ideas are the trigger for organisational improvement. Without accompanying changes in the way that work gets done, only the potential improvement exists." In a firm, the organisation starts to learn with the intention and willingness to learn, which is expressed and supported by top management and must be shared by the organisation's members. Learning in organisations will only be effective if there are appropriate tools and platforms for learning, which requires a deliberate intervention by leaders to establish the necessary internal conditions for the organisation to operate in a learning mode (Garvin, 1993; Goh and Richards, 1997). This leads to the following hypothesis:

H₁: A firm's organisational learning readiness positively impacts a firm's intention to innovate in services

According to Tan and Yoo (2004), capabilities such as appropriate and timely feedback and appraisal on learning and shared values among the members of organisations are important to a firm's level of organisational learning readiness. A number of studies have investigated the effects of organisational learning on organisational performance (Calantone et al., 2002; Sadler-Smith et al., 2001; Baker and Sinkula, 1997; Bontis et al., 2002). Baker

and Sinkula (1999) posited that learning orientation will indirectly influence organisational performance. In many firms, an innovation is a top-down process that creates a climate and culture towards innovation and requires action by non-managers in order for an innovation to reach the market (Dewar and Dutton, 1986; Damanpour and Schneider, 2006). This leads to the following hypothesis:

H_{1a}: A firm with a culture of promoting innovation will positively impact a firm's intention to innovate in services

In order for an organisation to learn, it first must commit to learn and this requires the intention to learn, which brings us to the second variable of the organisational learning readiness construct- commitment to learning. Tan and Yoo (2004) asserted that organisational learning requires a commitment on the part of the firm and whilst learning intent reflects the decision on the part of the firm in its “mind” and “will” that it intends to engage in organisation learning, organisational commitment refers to the implementation of its intent. Where intention is equal to the vision and is an antecedent to action, the firm's action to fulfil its intention is termed learning commitment. Unlike Sinkula's usage of the word “commitment” (1997), commitment is not perceptual and instead is demonstrated by a firm's dedication and investment to its learning intent and it is the firm's sincere and dedicated adherence to the goal of learning. The act of committing is shown by investing in learning infrastructure, training and development, systems, activities, policies and procedures to encourage learning in an organisation. This leads to the following hypothesis:

H_{1b}: A firm's commitment to learning will positively impact a firm's intention to innovate in services

Another dimension of organisational learning readiness is open-mindedness. Calantone et al. (2002) defined a firm's open-mindedness as its willingness to critically evaluate the organisation's operational routine and accept new ideas. This idea was similarly expressed by Senge (1990), "Mental models are deeply held internal images of how the world works, images that limit us to familiar ways of thinking and acting. Very often, we are not consciously aware of our mental models or the effects they have on our behavior. Organisations have many mental models. Mental models "limit us to familiar ways of thinking and acting". Every planning procedure must, at some point, expose and challenge the organisation's mental models." Only when organisations proactively question long-held routines, assumptions, and beliefs, are they engaging in the first phase of unlearning. Unlearning is at the heart of organisational change, and open-mindedness is an organisational value that may be necessary for unlearning efforts to transpire (Sinkula et al., 1997). This leads to the following hypothesis:

H_{1c}: A firm's receptiveness to new ideas will positively impact a firm's intention to innovate in services

The last facet of an organisation's learning readiness is a firm's organisational alignment. According to Tidd and Hull (2003), it is necessary for an organisation's members to have a clear and shared understanding of where the organisation is heading to and this must be articulated throughout the organisation. Xie and Wang's (2008) study on manufacturing firms also found that an internal shared vision positively affects innovational mechanism, and innovational mechanism has significant effect on innovation. This leads to the following hypothesis:

H_{1d}: A firm's organisational alignment will positively impact a firm's intention to innovate in services

Swayne et al. (2006) wrote that a firm's mission expresses the firm's unique philosophy, target market and among other things its preferred self-image. MacDonald's study in 2007 showed results that a clear, motivating organisational mission helps an organisation to focus its attention on those innovations that will most likely support the accomplishment of that mission. Such a mission also creates a climate in which innovations are given a fair chance to succeed. As a result, firms with clear, motivating missions tend to be more innovative. By bringing everyone in the organisation on board to pursue the mission, innovations will be developed, recognized, and adopted. If the organisation's value system places the mission at the heart of all activities, the employees are likely to be supportive of the mission, even at the sacrifice of personal, short-term objectives. This leads to the following hypotheses:

H₂: A firm's organisational mission positively impacts a firm's intention to innovate in services

H_{2a}: The importance in fulfilling a firm's mission positively impacts a firm's intention to innovate in services

H_{2b}: The orientation of a firm's mission positively impacts a firm's intention to innovate in services

Levitt and March (1988) found that past success and failure shapes the future decisions of an organisation and posited that the greater the experience of the firm, the more likely it is to adapt to new conditions. However, the organisation's prior history (memory) constrains its future behaviour in that learning tends to be premised on local processes of search. This means that even if the environment turns hostile to an organisation, it may resist change because it is difficult for the organisation to act on replacing systems, and unlearn and relearn a new system (Argyris and Schon, 1978). In addition, what has worked well in the

past such as norms and procedures built up over time are difficult to uproot. Hence, many successful organisations tend to become complacent, learn too little, and eventually fail (Nystrom and Starbuck, 1984). This leads to the following hypothesis:

H3: Innovation experience negatively impacts a firm's intention to innovate in services

The external environment provides opportunities (information, resources, technology) and constraints (regulation, restriction on capital or information) (Damanpour and Schneider, 2006). Tidd and Bodley (2002) found that perceptions of environmental uncertainty seem to affect the organisation and management of new product development. Innovation scholars have often posited that the primary stimulus for organisational innovation and change come from the external environment; hence, characteristics of an organisation's environment may be critical to its ability to innovate (Pierce and Delbecq, 1977; Tornatzky and Fleischer, 1990; Camison-Zornoza, Boronat-Navarro and Segarra-Cipes, 2007). In business organisations, the structure of the market (competition, concentration), technological dynamism, appropriability conditions and market growth are considered the prominent environmental factors influencing technological product and process innovations (Cohen and Levin, 1989; Nohria and Gulati, 1996).

For this thesis, the paper focuses on the availability of financial resources as it has been shown to promote innovation and the lack of resources inhibits it (Damanpour, 1991; Nohria and Gulati, 1996; Rosner, 1968), and according to Hall (2002), smaller firms are more likely to be financially constrained as they lack track record for which forms a basis for external funding being made available. New product development literature asserts that the availability of financial resources can expand a firm's capacity to support its innovative activities (Del Canto & Gonzalez 1999), whereas the lack of financial funds may limit the

firm's level of innovation (Teece & Pisano, 1994). Also, as more companies utilize the Internet to gain more customers, technical resources (such as IT systems and production and engineering tools) have also been found to positively affect innovation (Song & Parry 1997; Gatignon & Xuereb 1997). Hence, carrying out innovation activities in many cases requires a minimum prior investment in highly sophisticated technical equipment, which raises the possibility of producing innovative output of increased value for the firm. This leads to the following hypothesis:

H₄: Availability of external funding capital will positively impact a firm's intention to innovate in services

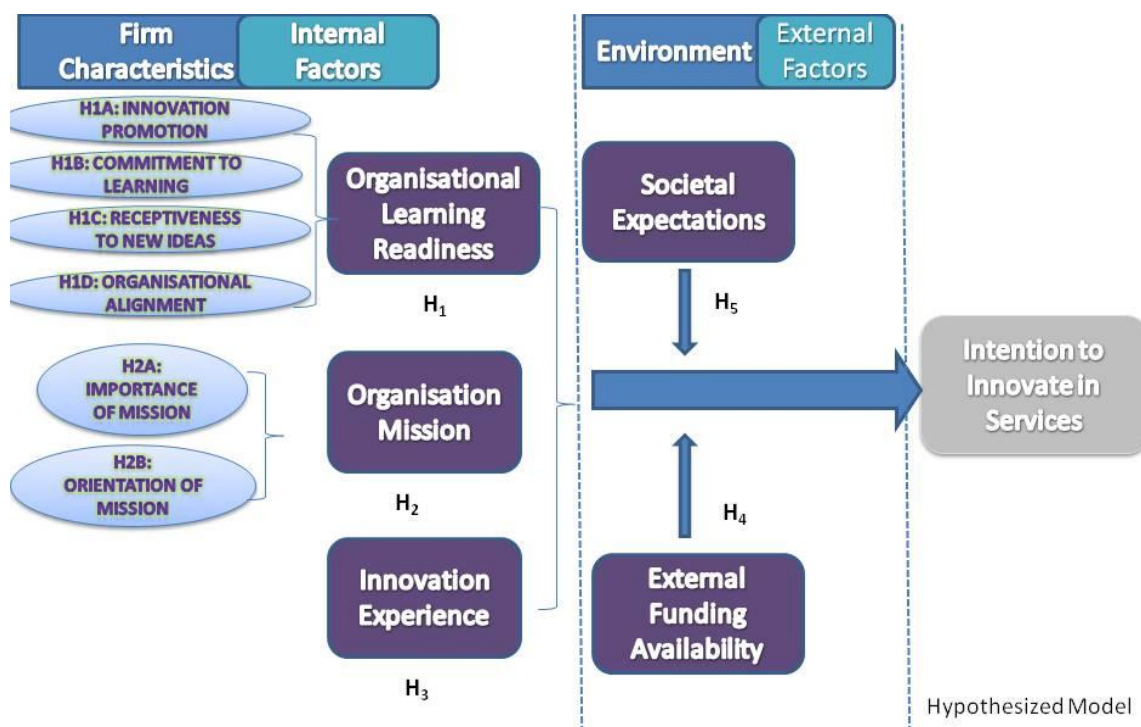
In the past few months, loyalists have been waiting for the day when iPhone 5 will be unveiled, despite many postponements. Looking at the success of Apple's iPhone and iPad, one cannot discount the relationship between the impact of societal expectations and innovation. In a move which appears to soothe the iPhone fans, the iPhone 4s was released as opposed to the much speculated iPhone 5. Apple's competitors such as Samsung and HTC are ever present in the competitive market to take advantage of iPhone 5's no-show and poach discerning consumers by producing even better touch-screen phones in hope that the Apple loyalists will make a brand switch after waiting for long and being disappointed.

Another great source of examples of how the society influences service innovation would be in the healthcare domain where hospitals are now going beyond treating diseases and are currently exploring holistic pain management such as providing palliative care, an area once unheard of as death was a taboo subject, but is now catching up in importance as the society becomes health-conscious and wants to be aware of options. This leads to the final hypothesis:

H5: Expectations from the society will positively impact a firm’s intention to innovate in services

The hypothesizing model (Figure 1) shows the moderating influence of external factors (environmental) on the internal (firm) characteristics of a firm and its eventual impact on the firm’s intention to innovate.

Figure 1: Hypothesized Model



Chapter 3: Methodology

3.1 Research Sample

A top/owner manager of 700 firms in a database, obtained from compiling the top 150 SMEs in Singapore over a period of three years from 2005-2007, was contacted for the participation in the survey. 119 firms agreed, comprising the research sample. The researcher visited the companies that agreed to participate in the survey, and collected the data through questionnaire surveys. Respondents were executive directors, CEOs or senior staff of the organisations. However, five of the surveys were found to be incomplete and dropped from the sample.

3.2 Research Instrument

The measurement scales were combined from tried and tested innovation survey sources, organisational learning and new product development literature. The organisational learning readiness scale composed of twelve items, adapted from Baker & Sinkula (1999), Goh & Richards (1997), Sadler-Smith, Spice & Chaston (2001), and Tan & Yoo (2004). The organisational learning readiness scale consists of four factors – innovation promotion, commitment to learning, receptiveness to new ideas, and organisational alignment. The items pertaining to measuring innovation promotion are, for example, “An emphasis on constant innovation is not part of our organisational culture”; “Senior managers in this organisation resist change and are afraid of new ideas”; “Employees are discouraged from experimenting with new and novel ways of working.” All items were reverse coded in analysis. Items measuring commitment to learning were “The collective wisdom in this organisation is that once we quit learning, we endanger our future”; “Our organisation believes in, and implements training for its staff with each department requiring a minimum number of

training days”; and “A definite amount is set aside in our budget for training and learning.” Receptiveness to new ideas was measured using items – “Managers encourage employees to think outside of the box”; “Original ideas are highly valued in this organisation”; “Managers in this organisation can accept criticism without becoming overly defensive”; and “From my experience, people who are new in this organisation are encouraged to question the way things are done.” Finally organisational alignment was measured using two items – “All employees are committed to the goals of this organisation”; and “Employees view themselves as partners in charting the direction of the organisation.”

The author developed new items in order to measure organisation mission (five items), innovation experience (three items), external funding availability (two items), societal expectations (three items), and intention to innovate (three items). Organisation mission was composed of two factors – importance in fulfilling, and orientation, of mission. Importance of organisation mission was measured using the new items – “Our mission is a powerful motivator”; “Many of our innovative ideas come directly or indirectly from trying to achieve our mission”; “Our mission helps to focus our decisions as to which innovative projects we should pursue”; and “Our mission helps to unify our organisation when choosing which new projects to undertake.” Orientation of organisation mission was measured using the items such as “Our organisation keeps up with technological advances”; and “Our organisation has a reputation for being innovative.”

Innovation experience was measured by the items such as “Our organisation has the management know-how and skill to start and manage new services or programmes”; and “We believe that our employees are very knowledgeable in their respective fields.” Availability of

external funding was measured using the items such as “There are external funds available for us to engage in innovation in services”; and “We believe that our organisation can easily tap on external funds for innovation in services.” Societal expectations were measured by using the items such as “Our customers expect us to constantly introduce new or significantly improved services or programmes”; and “We strive to keep up with the services or programmes introduced by other organisations serving the same sector.” Finally, intention to innovate was measured using items such as “Our organisation intends to start a new service within the next 2 to 3 years”; and “Our organisation does not intend to start any new services (reverse coded).” The respondents were asked to indicate their perceptions on the research variables from ‘strongly disagree’ to ‘strongly agree’ on a 5-point scale.

3.3 Validity and Reliability

All constructs in the study have face and content validities derived from the extant literature (Baker and Sinkula, 1999a; Goh and Richards, 1997; Sadler-Smith, Spicer and Chaston, 2001; Tan & Yoo, 2004). Discriminant validities for the constructs were examined by exploratory factor analysis, using principal component factor method with varimax rotation. After excluding items loading with lower than 0.4, twenty-six items loaded on the nine separate factors (four factors for organisational learning readiness, two factors for organisation mission, and three factors for innovation experience, availability of external funding, and societal expectations) as anticipated, supporting their discriminant validities.

A coefficient alpha test was performed to examine the internal reliability. All of the independent variables - organisational learning readiness (innovation promotion, 0.73; commitment to learning, 0.72; receptiveness to new ideas, 0.69; organisational alignment, 0.71), organisation mission (importance of mission, 0.88; Orientation of mission, 0.78),

innovation experience (0.66), external funding availability (0.63), societal expectations (0.68) - are above the cut-off of 0.60 suggested by Nunnally (1978). Table 1 provides the means, standard deviations, and correlations among the variables.

Table 1 Means, standard deviations, and correlations among the variables

Variable	Mean	S.D	1	2	3	4	5	6	7	8	9
1. Innovation Intention	10.28	2.76	-								
2. Innovation Promotion	7.56	2.66	-0.27**	-							
3. Commitment to Learning	10.37	2.18	0.19	-0.19*	-						
4. Receptiveness to New Ideas	15.25	2.46	0.36**	-0.35**	0.29**	-					
5. Organisational Alignment	7.59	1.45	0.18	-0.28**	0.28**	0.40**	-				
6. Importance of Mission	14.29	3.02	0.25*	-0.29**	0.38**	0.42**	0.49**	-			
7. Orientation of Mission	6.92	1.85	0.42**	-0.38**	0.32**	0.43**	0.32**	0.41**	-		
8. Innovation Experience	10.75	2.08	0.05	-0.14	0.17	0.46**	0.19*	0.42**	0.23*	-	
9. External Funding Availability	5.96	1.77	0.37**	-0.13	0.27**	0.10	0.20*	0.32**	0.33**	0.31**	-
10. Societal Expectations	11.47	1.97	0.31**	-0.16	0.31**	0.51**	0.34**	0.51**	0.49**	0.50**	0.32**

*p<0.05, **p<0.01

Chapter 4: Analysis and Results

4.1 Descriptions of Sample

Out of the 114 survey respondents, only 59 firms (51.7%) innovated in the past three years with an average of 2.5 service innovations per company. The findings showed that most firms cited the reason as to why their firm did not innovate in services was because they were uncertain if the service would be well received (32%), followed by the reason that the weak market conditions (23%) were not favourable to them launching any new services. The average number of staff hired per firm was 28 persons, with only 19% of staff being a degree-holder and the rest with a diploma or below. Many of the responding firms served a variety of customers across a wide selection of sectors such as wholesale and retail trade to manufacturing and transport and storage. Of those who innovated in services, almost half of the firms earn an annual income of over S\$500,000.

These firms generally would characterise their industry to be one that is rapidly changing (60% agreed) and cut-throat (70% agreed), and yet faced with these adversities, it provides big opportunities for innovation occurrence. Their customers are viewed as savvy and on the lookout for new services regularly, which provides a pressure to innovate in order to keep their market base. This could also be due to their services being easily replicated (67% agreed) by their fierce competitors so much so that they do fall back on pricing to compete effectively (59% agreed).

These firms highlighted what drives their decision to innovate is mainly propelled by the need to increase (88% agreed) and improve on the range of services (86% agreed) their

firms provide so as to enter new markets or to increase their market share. Almost 85% of these firms do view value-add as a form of service innovation. Least of their concerns is innovating because they are environmentally-conscious or wanting to improve health and safety, this could partly due to the nature of their services i.e. the customer sectors which they service. Interestingly just over half of the respondents attribute their drive for innovation to the availability of government grants.

When these firms were surveyed on their sources of information and cooperation for innovation, these findings showed that 86% of the time, the firm's customers were the source of their innovations, which is a major shift in paradigm when innovations were thought to be supplier-led. Also, it seems that these firms do copy from their competitors (72%). Interestingly, the sources of innovation, which fared the worst, were universities and governments.

Finally, these firms were asked about which method of innovation protection was important to their firm, 15% felt that trademarks, followed by confidentiality agreements (14%), would best protect their innovations. Interestingly, the method these firms thought had the least amount of protection was the complexity of design.

4.2 Analysis and Results

This study explored the direct effect of the independent variables (organisational learning readiness, organisation mission, innovation experience, availability of external funding, and societal expectations) on a firm's intention to innovate in service. Hierarchical multiple regression analysis was employed to test the hypotheses. According to Bagozzi

(1984), this method was appropriate for analysing multiplicative constructs in regression analysis. The dependent variable - intention to innovate in services - was created before examining the hypotheses.

H₁ predicts that a firm's learning readiness may have a positive effect on its intention to innovate. More specifically, H_{1a-d} predicts that a firm's innovation promotion, commitment to learning, a firm's receptiveness to new ideas, and organisational alignment may lend positive effects on a firm's intention to innovate. As shown in Table 2 the coefficients for innovation promotion (H_{1a}), commitment to learning (H_{1b}), and organisational alignment (H_{1d}) were not significant whereas a firm's receptiveness (H_{1c}) was significant and positive (0.36, $p < 0.01$). Therefore H₁ was partially supported.

H₂ claims that the organisation mission does make a positive difference in its intention to innovate. The organisation mission was measured using two factors - importance in fulfilling the mission and the mission's orientation. A coefficient for the firm's importance in fulfilling its mission (H_{2a}) was insignificant whilst the orientation of the firm's mission (H_{2b}) had a significant and positive effect on its intention to innovate in services (0.23, $p < 0.05$). Hence, H₂ was partially supported.

The third hypothesis predicts that a firm's innovation experience may negatively influence a firm's intention to innovate. A coefficient for innovation experience (-0.35, $p < 0.01$) was significant and negative, supporting H₃.

Of the two environmental factors (external fund availability and societal expectations) influencing intention to innovate, H₄ predicts that availability of external funding may have a

positive effect on a firm's intention to innovate. A coefficient was significant and positive (0.32, $p < 0.01$) as expected, and thus H_4 was supported. H_5 predicts that societal expectation may have a positive effect on a firm's intention to innovate in service. A coefficient was insignificant, rejecting H_5 . The results will be discussed in the next section in more detail.

Table 2 Hierarchical regression analysis on the innovation intention

Variables	Full Model
<i>Internal Environment</i>	
Innovation Promotion	-0.05
Commitment to Learning	0.01
Receptiveness to New Ideas	0.36***
Organisational Alignment	-0.09
Importance of Mission	-0.02
Orientation of Mission	0.23**
Innovation Experience	-0.35***
<i>External Environment</i>	
External Funding Availability	0.32***
Societal Expectations	0.13
R²	0.47
F	5.50***

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Chapter 5: Discussion and Limitations

This study shows which organisational and environmental attributes affects the SME's intention to innovate in services. A few interesting findings emerge from the analysis for discussion and implications. Only one out of four previously tested factors – receptiveness to new ideas was found to enhance organisational learning readiness of the SME when it intends to engage in innovation of service. The following are a few possible explanations the other three factors were not as important as receptiveness to new ideas.

Firstly, there may be a disconnect between employees being provided resources to innovate (such as training and development in a firm's commitment to learning) and the actual act of innovating. The top management may have provided resources and learning platforms to the employees as simply training and development without explicitly linking the learning to subsequent innovation activities. Hence, apart from investing resources in learning, the expectations of application through service innovations at work may not have been articulated.

Secondly, since resources in an SME are limited, the management may choose to invest these resources in certain areas which will only provide current benefits to the firm such as learning a software programme in order to perform trouble shooting. This could be in a way be related to the manpower crunch that SMEs face and hence they do not see the value of long-term investments in employee training and learning. As a result of being myopic, the firm can only reap limited short-haul benefits, if at all.

Thirdly, drawing from the earlier findings, a majority of these employees have a diploma or less in education, and it could be the case that such employees may think or are accustomed to think that innovations are for others more higher qualified. In meritocratic Singapore society, where employees may be assigned jobs according to their educational qualification, with decisions being made top-down, cultures may exist in SMEs perpetuating the service innovation must be management-initiated and led.

According to Damanpour (1991), and Dewar and Dutton (1986), top managers are a potent force for or against innovation, especially if decision-making power is concentrated in their hands and influence the adoption of innovation by creating a favourable climate toward innovation. Hartley (2007) stated that the front-line staff is a good source of innovation as they are the first line of interaction with the clients and do perform minor tweaks to make a service suit the customer. However, it does not matter if the employees are already inclined towards innovating as long as the decision makers in the firm are not receptive to the ideas, which will only serve to thwart any intention of innovating, which is in line with the findings of H_{1c}.

Moving our focus onto the second hypothesis- it posits that an organisational mission (measured by importance of fulfilling its mission and orientation of mission) has a positive impact in a firm's intention to innovate - was eventually found to be only partially supported. Here, the author present two possible explanations, one of which is linked to the structure of decision-making in an SME where despite having less than 200 employees, directives are top-down and therefore employees are merely soldiers instead of being change agents who can initiate and implement new ideas and innovations. Second, in line with a study conducted by Bart (2004), where findings indicate that mission statements, without appropriate learning

on the part of employees, may be just a waste of valuable management time. So even if there are innovation-focused missions, it could be a case of merely paying lip-service since the actions imperative in innovating in service do not follow.

Although some authors (Cohen and Levinthal; 1989, 1990) posits that adoption experience improves a person's ability to select good ideas, the findings for the third hypothesis found that a firm possessing prior experience in innovation discourages its intention in innovating in services, concurring with findings by Argyris and Schon (1978) that a firm finds it difficult to unlearn and relearn tried and tested methods. This finding is succinctly explained by Oetinger (2004), "Finding something new is not the problem; getting rid of the old presents the real threat". The results in the third hypothesis can be explained by adopting the theory of path dependence where it is argued that low standards can simply continue in existence because of the legacy they have built up. This in part could be due to the organisational decision makers' values and preferences, which acts as a filter through which information about organisational performance is interpreted and transformed into organisational action (Hambrick and Mason, 1984; Hambrick and Brandon, 1988). As such, frequently used routines are more likely to be employed again in the future (Cyert and March, 1963: 99-100). Hence, organisations which refuse to unlearn tend to become complacent, learn too little, and eventually fail (Nystrom and Starbuck, 1984). According to innovation author Dennis Stauffer, unlearning is an important process to fostering innovation even though it takes time and resources. This result ties in with an earlier finding in this thesis where it was found that an organisation's receptiveness to new ideas is highly significant in a firm's intention to innovate, so it does not matter if the employees can come up with innovations as long as the top management remains stuck in their old ways.

Resources are needed to invest in an organisation's learning readiness, to develop and acquire necessary assets (Teece, 1986). External capital, to obtain equipment and hire people for innovative ideas, becomes a main source of financing when the SME's source of internal funding becomes limited (Schoonhoven et al., 1990). These concur with the results of the fourth hypothesis where external funding availability spurs a firm's intention to innovate. Stemming from the inflow of external funding, perhaps new ideas, directions, or collaboration may come in tandem with these funds. As one would imagine, these external funding normally comes with 'strings attached' such as profit-sharing and return in investments and yet SMEs do not count government grants as a factor to their decision to innovate in services. So it seems that the SMEs do have a preference for private external funding perhaps due to the relative ease of application and granting process compared to the scrutiny the firm has to undergo when applying for public funds.

Lastly, it seems that on the whole, societal expectations may not be as important as a firm's profit motive at an organisational level, which is demonstrated by the results in hypothesis 5. Milton Friedman wrote in his book titled *Capitalism and Freedom* (1982), that "there is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud." Yes, various authors and management gurus such as Drucker (1954) and Porter have argued that a firm should not be obsessed with profit-making but instead be focused on adding value to enhance customer satisfaction, but this paper argues that this premise has to be preceded by the firm's ability to survive in a competitive market i.e. just like air is to humans, profits are to firms. When a firm is faced with strategizing for innovation in services and for profit-earning, there is no prize for guessing which the firm will favour. The challenge that the management would face is how to tie both strategies coherently and translate it into action so

that the company can propel forward; something that SMEs in Singapore is lacking, judging from the findings in this paper.

The author recognizes that there are several limitations that this study faces such as the small sample size of SMEs hence these findings may be limited to small and medium firms in general. In addition, as this study was conducted purely on SMEs operating in Singapore, it may not be necessarily be representative of SMEs in the world or larger firms in Singapore. The author also faced difficulty in collecting data on the firm's age, size and industry, which could be a platform for further research as these factors can be used as control variables for more in-depth studies into SMEs in Singapore.

Chapter 6: Conclusion

The purpose of this study is to explore antecedents and their impact on a firm's intention to innovate. This study found that a firm's organisational learning readiness, especially a firm's receptiveness to be of utmost importance when it comes to innovating in services, which led to H₁ being partially supported. This study also found that the impact of organisational mission on a firm's intention to innovate was only partially supported where the mission's orientation would significantly impact the firm's intention. The results of the third hypothesis lend support to the negative effect a firm's innovation experience may have on a firm's intention to innovate. This study also explored two environmental factors divided into two hypotheses- external fund availability and societal expectations and found that only the availability of external funding has a positive effect on a firm's intention to innovate.

These findings seems to suggest that to make an organisation more innovative, the average firm must do more to build a bridge between investing in employee learning, as part of enhancing overall organisational learning, to the actual act of innovating. This can be done by linking training to innovation output to instill some form of justification of investments in organisational learning readiness.

Secondly, arising from the results of this study, the manager should not only look at internal sources of funding but shift the focus towards obtaining external resources as it seems to motivate the firm to innovate in service. As such, perhaps seeking projects which requires external funding may be the way to forge ahead.

Further, this study encourages the firm and its owners to look inwards and identify barriers within the firm especially in relooking mindsets and routines of top decision-makers

to be more receptive and willing to allow for exploration of new ideas which could be developed into innovations in services. The firm may need to learn to recognize that innovative activities may not necessarily be management-thought or led, and in fact the employees may know a thing or two. This perhaps can be cultivated by having open lines of communication and employing less perceptual filters in the search of innovations. Another possible suggestion to note is also that the firm should be more resourceful in finding better courses for the employees to train in other than those which the SMEs have grants for (government-linked courses) and provide a future roadmap of staff training and development and not be fixated on only improving its current competencies. By building a training roadmap that ties in with the firm's need for profit-making through innovating in services, the employees will be able to appreciate the firm's investment in their growth, and may owe a sense of loyalty to do well for the firm and themselves.

It seems the case that a possible area for these firms to further improve their ability to innovate in services is through future collaborations with the universities' research labs, which interestingly ranked the lowest in terms of being a source of innovation. It could be the case that these SMEs are not aware of the wealth of resources and funding which can be exploited through these collaborations. This point ties in with the fact how these firms do not see the value of complex service innovations as a method to protect a firm's innovations and yet are weary of being imitated. These firms may not be savvy to the ways to build sophisticated services so that it is inimitable and becomes a source of competitive advantage, and what better way to do it than to explore it together with the research labs which may allow for service-testing with less severe implications to the firm when compared to rolling out a service live.

On a concluding note, this study has contributed to the extant literature on service innovation by empirically investigating the impact of independent variables, such as organisational learning, mission, and innovation experience, have on a firm's intention to innovate, and demonstrated there is a need to deliberate the possible effects of the environmental context on a firm's organisational learning readiness, mission and innovation experience and consequently its intention to innovate in services. Both SME managers and researchers can benefit from these findings and ensure that coherence of the organisational strategies a firm undertakes and better learning systems are designed which, in turn, lead to more effective organisation for innovating in services.

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