

ROLE OF ICT INNOVATION IN FACILITIES MANAGEMENT SERVICES IN MALAYSIA

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ABSTRACT

The innovation sources in facilities services and the roles play by information and telecommunication technology (ICT) are the enabler innovation processes. This proposal based on the underlying idea to evaluate the sources of innovation facility management services and the role of ICT in supporting such innovation processes. Based on literature review, a conceptual framework is proposed, which is then used to analyze empirical data. The conceptual framework is developed based on the literature review as a guideline for the research processes and data analysis. The empirical data will be gathered through structured interviews with main actors in the facilities management market. The main finding is that facilities management services innovation is expected driven by the management. Nevertheless, employees may contribute to innovation and customers may act as the co-creation through customer pull mechanism. These roles seem to be more limited in facilities services innovations because it can be costly to consider the demand from the customer. From the usage of ICT in facility management services, it is expected to increase productivity, cost reduction, established the communication channel and expedites the delivery system.

INTRODUCTION

This chapter aims to provide an overview of the background of the study. It also discusses the problem statement and the objectives of the study.

BACKGROUND

In the last three decades, Facilities Management (FM) has established itself as a key service sector, with a diverse and highly competitive market of FM contractors, in-house FM teams, FM suppliers, FM consultants, and professional FM institutions (Cardellino and Finch, 2006) that form very complex FM supply chains (Nutt, 2000). Facilities management (FM) can be defined as the integration and alignment of the organizational non-core services required to operate and maintain a business to fully support the core objectives of the organization (Pitt and Tucker, 2008). Jensen (2009) defines the facilities management supply chain as a network of connected and interdependent organizations mutually and cooperatively working together to control, manage, and improve the flow of facilities management materials and information from suppliers to end users.

Nowadays, the dedication of FM organizations to new service developments and continuous innovation processes seems to be the way to stay in business (Mudrak et al., 2004), constantly exceeding customers' expectations and adding value to the core business of the client organization (Pitt and Tucker, 2008).

Traditionally, innovation has been understood as an internal organizational activity. Lately, innovation has been seen as an activity that happens in networks with customers and business partners (Chesbrough 2006; Christensen, 1997; Christensen and Bower, 1996). For example Chesbrough (2003) argued that the process of innovation has

shifted from closed systems to a new mode of open systems involving a broad range of players distributed up and down the supply chain.

This is also the case within the service industries (Alam and Perry, 2002). According to Ozdemir et al (2007), it is the use of cheap and instant information flows, facilitated with ICT, which places even more emphasis on the linkages and relationships of firms. It is from these linkages and the supply chain in particular, that firms have to ensure their capability to fully capture and utilize innovative ideas. The communication between the customers, suppliers and companies has been made easier, faster and more direct contribute by the advent of information technologies, ranging from simple e-mails to advanced web-based systems.

PROBLEM STATEMENT

Malaysia is still lagging behind in the aspect of software development specifically to FM adoption of integrated FM may require high initial cost, unless the computerized programmes can be found locally in the market. Most FM players claim that their profits are not as much as expected and funding support is required in order to adopt this integrated system. (Mustafa and Adnan, 2008)

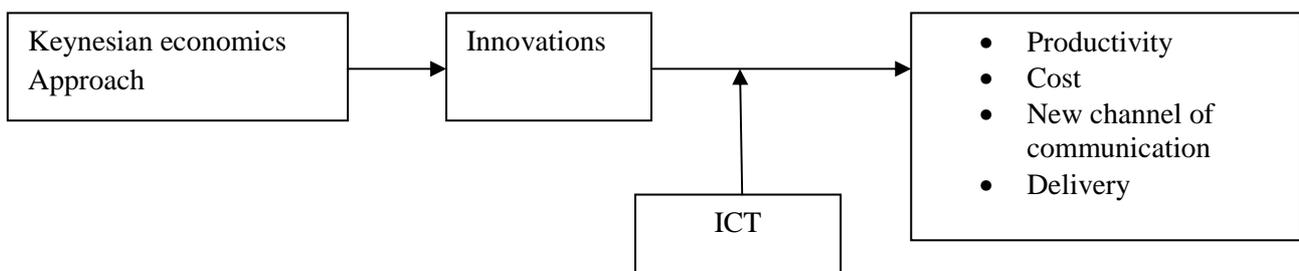
The issues of slow technology development contributed by lacking of knowledge shared, networking and failure to internalize the spillover effect of knowledge and skill creation. The issue can be addressed by looking at the variable of ICT usage at work place, the innovation created and the knowledge captured from the ICT usage.(Tahir and Sam, 2010)

From two establishments above, management play its important role in the ICT facility management to enhance productivity, cost reduction, establishing communication channel and speed up delivery system.

OBJECTIVES OF THE STUDY

Theoretical Approach

To address the problem statements, fundamental economic theory has been considered to address the issues of innovation and the role of ICT in FM as shown in figure below.



Keynesian economist claimed that the technological development happens incrementally and can be describe by the innovation processes. The presence of ICT will contribute to the enhancement of productivity, cost, creating communication channel and delivery system.

The objectives of this study are:

1. To study the usage of ICT Application to access information; cost reduction
2. To evaluate contribution of ICT towards enhance work productivity
3. To evaluate new channels of communication; strengthen social cohesion such as enabling special interest group to connect and establish virtual communities and virtual teams
4. To investigate the speed of delivery system
5. To develop/introduce a new model

LITERATURE REVIEW

2.1 Service Innovation in FM

There are certain key differences that distinguish manufacturing from services, and FM services as a subset (Cardellino and Finch, 2006). In FM, the complexities of the management of the interaction between the services provided is as essential as the provision of the service itself, if it is to deliver maximum added value to the organization (Goyal and Pitt, 2007).

Services are typically distinguished from products by four distinct characteristics: intangibility, perishability, inseparability, and heterogeneity (Alam, 2006). The nature of services can be understood through the characteristics of the service act, type of the customer relationship, and customizability of the service, nature of demand, delivery mechanism, and attributes of the service product (Warren, Abercrombie, and Berl, 1989). Services can also be described through two sets of attributes, intrinsic, that is the service itself, and extrinsic, that is the networks (Methlie and Pedersen, 2007). The intrinsic attributes are though associated with accessibility related to time and space; “being personal”; usefulness (accessibility and functionality); enjoyment; and technical specifications (speed and capacity). The extrinsic attributes are those related to direct and indirect network effects; network size; complementary service variety; speed of development; and quality.

A number of classifications of service innovations can be found in the literature. Avlonitis et al (2001) categorize them as new-to-the-market, new-to-the-company, new delivery process, service modifications, service line extensions, and service repositioning types of service innovations. In general terms, services innovation can be expected to either improve services productivity or to develop new service models. Service innovations can also be viewed in terms of the dimensions, type of benefit offered and degree of service “separability” (Berry et al, 2006). The type of benefit offered refers to the fact that businesses can innovate by offering an important new core benefit or a new delivery benefit that revolutionizes customers’ access to the core benefit, whereas the degree of service “separability” addresses the question of whether the services must be produced and consumed simultaneously (Berry et al., 2006). Regardless of the categories innovations have been classified by (e.g. type, degree, impact, competence and ownership), a common element in most classifications is the element of novelty that adds commercial value (Narvekar and Jain, 2006).

FM innovation acts as an enabler adding value to the organization (Goyal and Pitt, 2007). In a UK based study, Cardellino and Finch (2006) found that FM organizations are highly active with service innovations, but that these are generally one-off commitments. They also found that primary determinants for the success of an innovation in FM organizations (Cardellino and Finch, 2006) were the awareness of the external market, the development process and the firm’s strategic and business fit. In addition a fully developed performance measurement solution via effective benchmarking can deliver a business tool in FM, whilst acting as a driver in the innovation process (Pitt and Tucker, 2008).

2.2 Role of ICT in Service Innovations

ICT capital has become the dominant source of investment in services (den Hertog, Broersma, abd van Ark, 2003). A widely accepted definition of service innovation includes a combination of technology innovation, business model innovation, social-organizational innovation and demand innovation, with the objective to improve existing service systems (incremental innovation); to create new value propositions (offerings); or to create new service systems (radical innovation) (University of Cambridge, 2008).

According to Keynesian economics the state can stimulate economic growth and improve stability in the private sector - through, for example, interest rates, taxation and public projects. In Keynes's theory, some micro-level actions of individuals and firms can lead to aggregate macroeconomic outcomes in which the economy operates below its potential output and growth. Keynes argued that the solution to depression was to stimulate the economy through some combination of two approaches:

- A reduction in interest rates.

- Government investment in infrastructure - the injection of income results in more spending in the general economy, which in turn stimulates more production and investment involving still more income and spending and so forth. The initial stimulation starts a cascade of events, whose total increase in economic activity is a multiple of the original investment.

The convergence of computation and telecommunications is seen as the central enabling technology, production platform and market opportunity for the evolution and growth of the modern service economy (Potts and Mandeville, 2007). We can distinguish two main roles of ICTs in service innovations. The first role relates to ICT as an enabler of a service innovation. Service innovations are often technology-based, comprising either of introduction of new technology or different use of existing technology (Barras 1986). Examples of this role are, for instance, e-banking and different e-government services. The second role refers to ICT as a support infrastructure for a service innovation. Examples of this can be the online help desk or the use of the web to collect ideas about new service offerings (see e.g. Prandelli et al, 2008).

Services innovation is thus not directly based on R&D, but on investments in and the adoption of new (ICT) platforms and the subsequent adaptation of these in order to produce new products and services or improved business processes (Potts and Mandeville, 2007). However, although the role of ICT in facilitating service innovation is paramount, ICT is neither a sufficient nor a necessary condition (den Hertog, Broersma et al. 2003).

3.0 CONCEPTUAL FRAMEWORK

This chapter describes the conceptual framework, and the development of the dimensions of variables of the study.

3.1 Conceptual Framework

Earlier innovation literature has focused on the organizational factors influencing innovation development. Rogers (1995) pointed out the important role of top management and employees in the innovation process. For example, top management can establish visions for the innovation or Provide support in the innovation process. Also Jeppesen and Molin (2003). Magnusson et.al. (2003), and Nambisan (2008) emphasize the importance of the organization and their employees in playing an active role for motivating users and converting user input to usable innovations. Previous research has identified the centrality of empowerment practices and the part of local tactical and operational innovative behaviours to innovativeness (Hinks, Alexander, and Dunlop, 2007).

However, while in the past companies were developing their innovation competences internally, today companies are more and more collaborating with suppliers, customers, consultants and sometimes even with competitors (Chesbrough, 2006). The role of the customer is changing from a pure consumer of services to a customer that might help to generate innovation through specific service demands or even becoming a partner in a process of adding value. Customers in the last role are becoming co-producers and co-creators of new services (Nambisan, 2002, 2008).

EMPLOYEE employment/ involvement	CUSTOMER		
		low	high
low		Management push/top down I	Customer pull II
high		Bottom-up III	co-creation IV

Theoretical Framework: Communication channel

The four categories in this framework are based on involvement of the employees and the participation of the customers in the service innovation process. When both employee involvement and customer participation are low (cluster I), explain about top down approach to service innovations or, management push, in other words. With low customer participation, but with empowered employees (high employee involvement) (cluster III), the innovation process is more bottom-up. If the employee involvement is low, but the customer participation high (cluster II), the service innovation is driven by customer pull. When both customer participation and employee involvement are high (cluster IV), the service innovation is co-created.

Different kind of ICT support can be expected to be utilized in FM services and service innovations. For those innovations that are more internally driven (cluster I and II), different types of ICT solutions are expected to be used. Some are of more general nature such intranet applications for communication and dissemination of information, others might be more FM specific.

For the more externally driven innovations (cluster II and IV) help desks, supply chain management (SCM) applications and increasingly other types of web-based applications such as social media service are expected to be useful (Scupola and Jensen, 2009; Prandelli et al., 2008).

METHODOLOGY

This section explains and describes the choice for a multiple case study over a period of time. Subsequently, it can clarify how theoretical concepts and research questions are made operational in practice.

In this research, data will be gathered from interviews with companies, as well as from conferences and workshops on FM related topics (partnerships in FM, innovation in FM, and IT systems in facilities management) and archival sources. Mix of organizations (focus mainly on larger organization) was chosen to help to reveal different sources of innovation in FM organizations: FM service providers, FM customers and FM consultants.

The organizations were selected based on their market share, influence in the FM business, number of business segments within facility management services, and availability. The interviews focused specifically on the sources of innovation and the role of ICT in FM innovation process. Data on company background was supplemented by information provided on the companies' web sites, annual reports, sales brochures and other material provided by the companies or collected in the practitioner workshops and conferences.

In the first step of analysis of the data, data will be analyzed and coded independently with the help of the theoretical approach. In the second step, the qualitative data analysis software SPSS will be used to systematically

analyze the data from the interviews. In the final step, a new model will be introduced according to the research that had been done.

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