Constructing performance appraisal indicators for mobility of the service industries using Fuzzy Delphi Method

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Abstract

Based on the four perspectives of the balanced scorecard, including the financial, customer, internal process, and learning and growth perspectives, this study applied Fuzzy Delphi Method to construct key performance appraisal indicators for mobility of the service industries. The constructed indicators could serve as a reference for the service industries to establish applicable performance appraisal indicators according to the properties of the each industry after mobility is introduced. The research findings showed that cost control, profit growth, and sales growth are the top three indicators in the financial perspective, while service/product quality, customer satisfaction, and service timing are the three major indicators in the customer perspective. In the internal process perspective, information delivery, standard operation procedure, and interactions between staffs and clients are most valued. In the learning and growth perspective, corporate image, competitiveness, and employee satisfaction are most emphasized among various service industries.
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1. Introduction

With the thriving development of global wireless communication and the record-breaking prevalence of mobile phones, Internet users are no longer subject to traditional wired environments. The integration of wireless communication and mobile Internet services has been considered as one of the most promising investments, and mobile commerce is even a focus of various industries. Many industries have perceived that although e-enterprise allows employees to access the Internet at anytime, enhance work efficiency, and reduce cost, it is unable to satisfy external staffs that need to spend most of their working hours on attending meetings or visiting customers. They are unable to connect to the Internet anywhere and access the company database to retrieve important data instantly. Due to the inconvenience of the Internet access, many enterprises have perceived the importance of mobility, and that is the reason

why mobile Internet has been gradually paid attention to. Because of the immeasurable development potential of mobile commerce, some enterprises have already introduced mobile commerce applications for employees to accomplish more tasks in a shorter time. Mobile commerce allows them to work away from office, achieve a balance between work and life, enhance their satisfaction with the enterprise, and promote their loyalty and cohesion. Thus, enterprise mobility is not merely about constructing a convenient network access environment. It can increase productivity, investment return rate, and reduce cost. It can also benefit employee's work quality.

For enterprises, performance appraisal helps them diagnose whether the adopted strategy and organizational structure will help them achieve their goals. And the construction of performance appraisal indicators is also the first step for enterprises to conduct practical evaluations. In the era of new economy, enterprises must go through the transition from traditional performance appraisal systems to strategic performance appraisal systems. By integrating performance appraisal systems with strategies

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as well as integrated and global perspectives, enterprises are able to find out their competitiveness and the direction for improvement. The balanced scorecard is a strategic management tool in the era of knowledge economy (Niven, 2002). It not only links organizational strategies, structures, and prospects but also combines traditional and strategic performance appraisal indicators. Thus, enterprises can transform long-term strategies and innovative customer values into substantive activities inside and outside the organization (Chan, Gaffney, Neailey, & Ip, 2002). Despite a number of ways to filter performance appraisal criteria, not many enterprises in Taiwan have introduced mobile commerce, and the extraction of large samples is not easy. However, Fuzzy Delphi Method requires only a small number of samples and the derived results are objective and reasonable. It saves time and cost required for collecting expert opinions, and experts opinions will also be sufficiently expressed without being distorted (Hsu & Yang, 2000). Thus, this study uses Fuzzy Delphi Method as the main selection model for performance indicators.

Currently in Taiwan, mobility is mainly introduced to service industries, and better results have been observed in the consulting, real estate brokerage, retail, hospitality, banking, insurance, medical, and logistic industries. As a result, this study uses the four perspectives of the balanced scorecard, namely financial, customer, internal process, and learning and growth perspectives, as the perspectives for the performance appraisal of mobility. Through Fuzzy Delphi Method, the key indicators can be derived for the various service industries after the introduction of mobility. The research results can be provided as a reference for enterprises to construct performance appraisal indicators after mobility is introduced. Besides, from the perspectives of the balanced scorecard, mobile commerce system developers can develop systems that comply with the demands of enterprises according to the characteristics and strategic goals of various industries.

2. Literature review

2.1. Enterprise mobility

Enterprise mobility can be logically viewed as an extension of e-business (Kalakota & Robinson, 2001). Through wireless communication protocols, people can use mobile devices to manage business process activities at anytime anywhere, so as to reduce cost, save time, and enhance the efficiency of business process management. Besides, they can also have closer and real-time interactions with clients, business partners, and upstream/downstream industries (Tsalgatidou & Pitoura, 2001; Tarasewich, Nickerson, & Warkentin, 2002). The main benefit is that users can use mobile commerce services through mobile devices to retrieve desired information and satisfy consumer's demands at anytime and anywhere.

The applications of enterprise mobility include Internet-based services and applications developed exclusively for mobile environments. If classified by application targets, these applications can be roughly divided into business to business (B2B), business to employee (B2E), and business to consumer (B2C) (Kalakota & Robinson, 2001; Siau, Lim, & Shen, 2001). B2E is mainly about real-time management. For instance, employees can use mobile devices and wireless systems to retrieve internal resources of the enterprise, such as notice information and business progress. Therefore, employees working outside the office do not need to delay their work because they are away from office. Of course, information sharing (such as online learning and knowledge management) is also an important function of B2E applications. As to B2B applications, most enterprises focus more on real-time information collection (Varshney & Vetter, 2002). For instance, enterprises can use mobile devices at each retail point or terminal point to transmit instant information, including sale, return, or stock information, so that the interactions between enterprises and manufacturers can always maintain updated. Finally, the target of B2C applications is consumer. They are mainly applied in mobile banking services, mobile shopping, mobile advertisement, mobile information service, mobile entertainment/mobile video, and transportation guidance (Clarke, 2001; Kalakota & Robinson, 2001; Siau et al., 2001; Varshney & Vetter, 2002).

2.2. Performance appraisal and the balanced scorecard

Performance appraisal is a measurement of the achievement of organizational goals (Robbins, 1990), and the goals of enterprise activities are to enhance business performance. As to the indicators of business performance, financial performances, such as return on investment, sales income, and profitability, were usually adopted by researchers as indicators of performance appraisal in early years (Van de Ven & Ferry, 1980). But Galbraith and Schedel (1983) pointed out that performance appraisal indicators cannot be determined from a single perspective. The scope and perspectives involved are very complicated and extensive, and many expected goals are included. Venkatraman and Ramanujam (1986) proposed performances of three areas, including financial performance, operational performance, and organizational effectiveness. Kaplan and Norton (1992) proposed the balanced scorecard to integrate financial and non-financial indicators for the performance appraisal system, so that enterprise strategies could be substantively put into action to create competitive advantages. The object and measures of the balanced scorecard are derived from organizational prospects and strategies. It not only preserves the traditional indicators in the financial perspective to measure tangible assets but also incorporate indicators in the customer, internal process, learning and growth perspectives to measure intangible assets or intelligence capital. It is stressed that enterprise strategies should be evaluated from financial and non-financial perspectives, and data completeness and extensive evaluations are important. Thus, it can be