

INNOVATION TECHNOLOGY FOR INTEGRATION AND
APPLICATION OF ICT IN RETAILING

Hsin-Pin Fu

Professor, Department of Marketing and Distribution Management
National Kaohsiung First University of Science and Technology
hpfu@nkfust.edu.tw

Hsiang-Ting Su*

Ph.D. Program, College of Management
National Kaohsiung First University of Science and Technology
u9928912@nkfust.edu.tw
*Corresponding Author

Abstract

This paper has focused on establishing special store brand integration through virtual channels for high quality agricultural products. In addition, the cooperation and alliance with other industries to develop business opportunities will be another focus. Also set up the special stores for display and sale in various outlets to build online shopping website platform and offer kiosk machine, convenient ways to local consumers and tourists to go shopping. The process is to improve in supplier delivery orders to build vendor management platform. The purpose of this paper is (1) to discuss the in-depth for application of ICT innovation technology (2) to improve enterprise business processes of value-added services provider and replenishment, (3) the enterprise intercompany transfer cargo efficiently, and (4) reduce the stock rate.

Keywords: integration, retailing, ICT, innovation technology

Introduction

In recent years, the rise of services sectors has generated more and more interests on service-orientated and relationship quality (Wang, Ming-Chieh et al., 2013). The impact of economic and industry environment on operating mode of the traditional retailing has lost its competitiveness. Many suppliers deal with retailing store variety items, management inefficiency problems and then control each outlet inventory, sales situation, etc. It is how to create differentiated products, improve service quality and enhance service experiences to effectively expand consumer area and business opportunities. Due to the environment competition factors, make retail across industry district has increasingly fuzzy of development trend in multi- service. The price is transparent to emphasize quick and convenient era coming. The industry format must be applied to the information communication technologies (ICT) and services for more building and integration.

Over years, product quality and cost were emphasized as the core issues in obtaining and retaining the competitive advantage. on the other hand, active and innovative business models have been built through strengthening internal management mechanisms, processes, and virtual stores integration. With the information-processing efficiency, the

emphasis has moved to delivery requirements. The development of supermarkets by the social economic changes in the environment and consumer purchasing behavior, supermarkets has been toward diversification, chain-stores management and information technology operations, to expand the scale of procurement, reduce operating and purchase cost, in order to improve business performance.

Types of goods on thousands of suppliers in supermarkets may also be thousands more. How to integrate suppliers to shorten the distribution schedule and reduce the purchasing cost are becoming the important issues for retailing industry. That is, retailers now focus on supply-chain management (SCM) systems that integrate the information of suppliers (Sorescu et al., 2011), marketing and sales, procurement, distribution and finance. It is therefore necessary for retailers to shorten delivery times and to decrease inventory through faster information transmission (Fu, Hsin-Pin et al., 2004). Different formats comply with discount stores, supermarkets, and the different type convenience store.

Industry channels with ICT applications create new types of service, such as vending machines, no unmanned shops and other outlets. The paper discusses the integration that EZPOS retailers applied to build online shopping

platform system, the model responsible for the success of the operation, with a view to assist other retailers in the introduction of information technology.

Literature Review

Information technology (IT) is generally considered an enabler of a firm's agility. In this paper we draw upon innovation diffusion theory (Brancheau and Wetherbe, 1990) and more recent conceptualizations of IT adoption behavior to examine systematic differences among Rogers' (1995) adopter categories. A typical premise is that greater IT investment enables a firm to be more agile (Lu and Ram, 2011). Lu and Ram (2011) also studied the premise that organizations need to develop superior firm-wide IT capability to successfully manage their IT resources to realize agility.

With the rapid development of consumer demand changes and information communication technology (ICT), retailers build different industry types, formats and different segments of the consumer market at the same time based on different business models. For example, the convenience store is a 24-hour mode of operation in response to the industrial and commercial demand for social and night life. Discount stores and supermarkets are in response to the diverse needs of marketing channels to shorten the process, saving the

cost of sales to enhance production and marketing efficiency.

The current socio-economic era based on the invisible, dynamic and intellectual capital performance point of view, is that the value-added of the economy, and to emphasize the quality and enhance knowledge management and technology integration. Khan's (2000) study used the seven procedure improving steps proposed by Harbour (1994) to improve the speed quality and cost of an air cargo service. Mohanty and Deshmukh (2000) also studied a case that implemented a supply-chain management system. To assist the traditional retailers industry in enhancing competitiveness via the online shopping, the Taiwan government has assisted companies in the introduction of information communication technology management systems.

Roberts and Grover (2012) investigate information technology (IT) facilitates a firm's customer agility and, in turn, competitive activity. Customer agility captures the extent to which a firm is able to sense and respond quickly to customer-based opportunities for innovation and competitive action. Drawing from the dynamic capability and IT business value research streams, to propose that IT plays an important role in facilitating a "knowledge creating" synergy derived from the interaction between a firm's Web-

based customer infrastructure and its analytical ability.

Sutcliffe's (1990) study included an in-depth discussion of 30 successful enterprise resource planning (BPR) cases. This will enhance the firm's ability to sense customer-based opportunities. IT also plays an important role in "process enhancing" synergy obtained from the interaction between a firm's coordination efforts and its level of information systems integration, which facilitates the firm's ability to respond to those opportunities.

Methodology

Model Development

After reviewing the relevant literature, the function of ICT application of EZPOS store system management (see Figure 1) and integration is including agricultural products online shopping platform and enterprise resource planning (ERP) in Figure 2.

EZPOS Store Management

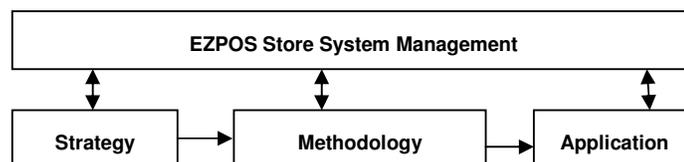


Figure 1. Application Model.

Systems of EZPOS store management in Figure 3.

Category (server to server)

Suppliers in this category had management information systems (MIS) or enterprise resource planning (ERP) systems (Pan and Jang, 2008; Zhu et al., 2010) in Figure 4.

System Planning

The system had to enable users to acquire information ubiquitously through wireless handheld devices. It was therefore necessary to plan the system in advance. This included planning of system efficiency, wireless environment evaluation, user end-positioning, information and communication quality, and system security and redundancy (see Figure 5).

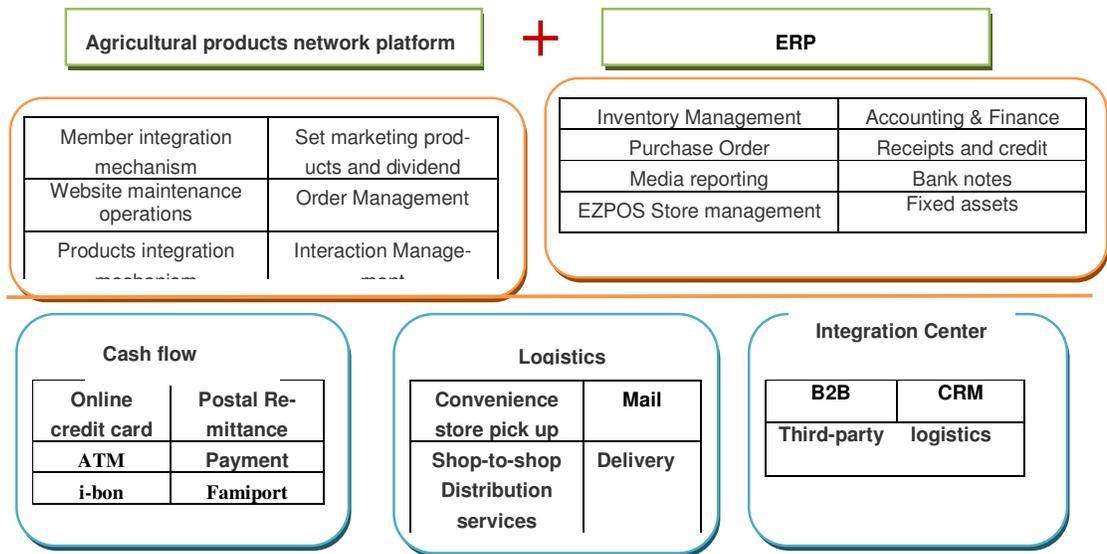


Figure 2. Structure of ICT Integration.

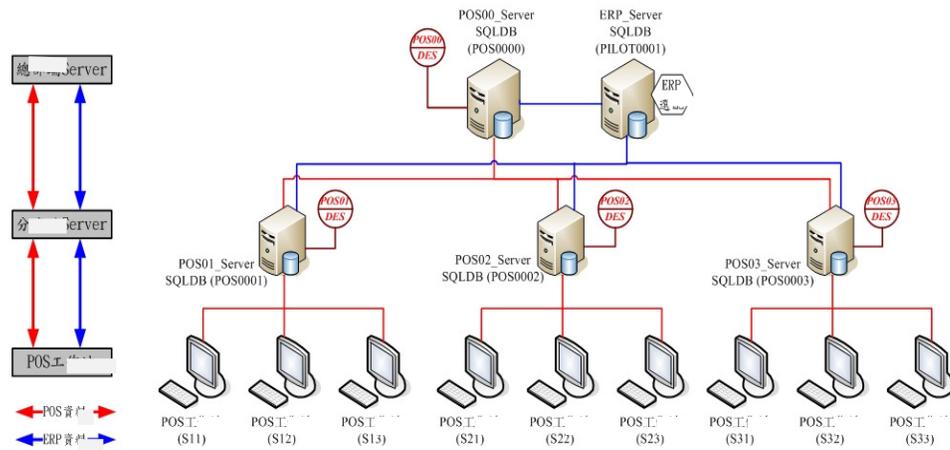


Figure 3 Systems of EZPOS Store Management.

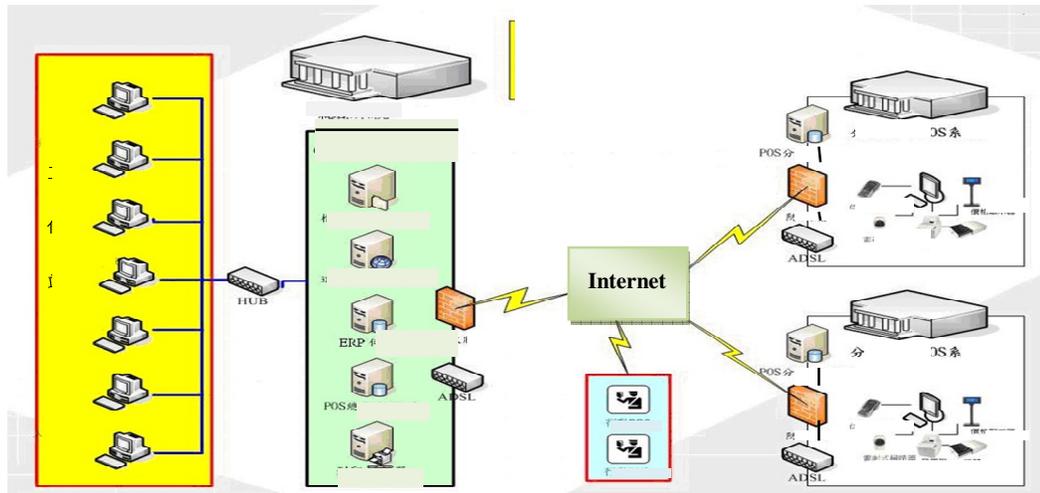


Figure 4 Information transmission model between EZPOS and its suppliers.

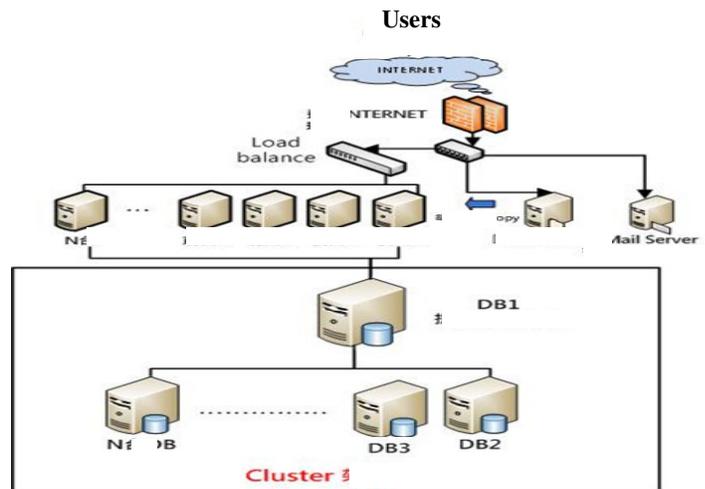


Figure 5. The flowchart of DB Cluster.

The functions of ICT application of EZPOS store management is including:

1. Agricultural products network platform:

- (1) Member integration mechanism
- (2) Set marketing products and dividend
- (3) Website maintenance operations
- (4) Order management
- (5) Products integration mechanism

(6) Interaction management

2. Enterprise resource planning:

- (1) Inventory management
- (2) Accounting and finance
- (3) Purchase orders
- (4) Receipts and credit
- (5) Media reporting
- (6) Bank notes
- (7) EZPOS store management
- (8) Fixed assets

3. Integration content of items:
- (1) Cash flow- online using credit card, postal remittance, ATM payment, i-bon (7-11), famiport (Family convenience store), etc.
 - (2) Logistics- convenience store to pick up, shop-to-shop distribution services, to mail, delivery, return of goods, etc.
 - (3) Integration center- business to business, customer relationship management, third-party logistics, etc.

Conclusion

To assist the retail industry in enhancing competitiveness to apply information communication technology, the Taiwan government has assisted companies in the introduction of supply-chain information management systems. Information Communication Technology (ICT) has collected and processed market information to adjust business strategy to increase the market competitiveness. The changes in the external environment emphasis on cost leadership, differentiation, and high quality marketing objectives, has been unable to meet the rapidly changing requirements of the market.

From research and development, the existing business process thinking and re-design based on customer demand from suppliers, purchasing, production, manufacturing to distribution, marketing, sales and customers on the

basis of the ICT applications and services to the financial and other value creation process, is not easy to imitate with the competitiveness of innovative business process. Allowing employees to participate in enterprise management, to achieve effective communication within the enterprise and the expectations in the new process and operation of the new organizational structure, establish strong adaptability and greater flexibility, rapid response to market demand, which is business process reengineering (BPR).

The integration of ICT in retailers of innovation technology with multi functions of applications to implement a system. The system has the potential to integrate with cash flow, logistics, and enterprise integration center in enterprise resource planning (ERP). The model used for the implementation procedure of ICT that should provide a useful strategy for other traditional industries that want to integrate information systems to their companies.

References

- Brancheau, J.C., and Wetherbe, J.C. (1990). "The Adoption of Spreadsheet Software: Testing Innovation Diffusion Theory in the Context of End-User Computing," *Information Systems Research*, 1 (2), 115-143.

- Fu, Hsin-Pin, Chang, Tien-Hsiang, and Wu, Wen-Hsiung (2004). An implementation model of an e-Procurement system for auto parts: a case study. *Production Planning & Control*, October, 15 (7), 662-670.
- Harbour, J. L. (1994). *The Process Re-engineering Workbook* (New York: Quality Resources).
- Khan, M. R. R. (2000). Business process reengineering of an air cargo handling process. *International Journal of Production Economics*, 63, 99-108.
- Lu, Ying and K. (Ram) Ramamurthy (2011). Understanding the Link between Information Technology Capability and Organizational Agility : An Empirical Examination . *MIS Quarterly*, December, 35 (4), 931-954.
- Mohanty, R. P. and S. G. Deshmukh (2000). Reengineering of a supply chain management system : a case study. *Production Planning & Control*, 11, 90-104.
- Pan, M. J. and Jang, W. Y. (2008). Determinants of the Adoption of Enterprise Resource Planning Within the Technology-Organization- Environment Framework: Taiwan's Communications. *Journal of Computer Information Systems*, 48(3), 94-102.
- Roberts, Nicholas and Varun Grover (2012). Leveraging Information Technology Infrastructure to Facilitate a Firm's Customer Agility and Competitive Activity : An Empirical Investigation. *Journal of Management Information Systems*, Spring, 28(4), 231-269.
- Rogers, E.M. (1995). *The Diffusion of Innovations*, 4th Edition, Free Press, New York, NY.
- Sorescu, Alina, Ruud T. Frambach, Jagdip Singh, Arvind Rangaswamy, Cheryl Bridges (2011). Innovations in Retail Business Models. *Journal of Retailing*, 87 S, S3-S16.
- Sutcliffe, N. (1990). Leadership behavior and business process reengineering (BPR) outcomes. An empirical analysis of 30 BPR projects. *Information Management*, 36, 273-286.
- Wang, Ming-Chieh, Lee, Yuan-Duen, Chen, Shun-Yu (2013). The moderating effect of workload on orientated service and relationship quality . *The International of Journal Organizational Innovation*, 6(1), 57-63.
- Zhu, Y., Li, Y., Wang, W. Q., Chen, J. (2010). What leads to postimplementation success of ERP? An empirical study of the Chinese retail industry. *International Journal of Information Management*, 30(3), 265-276.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.