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Effectiveness of Enterprise Resource Planning (ERP) in Supply Chain Management on Quick Service Restaurants in Riyadh

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EFFECTIVENESS OF ERP SOFTWARE IN SUPPLY CHAIN MANAGEMENT

Abstract

Restaurants have recently witnessed a fast growth in Saudi Arabia. Though this growth considers being relatively recent, it is widely observed by everyone. This literature review illustrates the effectiveness of enterprise resource planning (ERP) software in supply chain management and its application on quick services restaurants. The culture of eating out at the restaurants in Saudi Arabia is still relatively new and this is due to the long-embedded practices in the culture of having food together at home. Although there is an early emergence of consuming soft drinks and Turkish sweets, the notion of fast-food restaurants was delayed to more than four decades in the past. Saudis did eat food just at their homes or at visitations where it was prepared by their housewives. The inception of restaurants took place in KSA as to facilitate people who were travelling for different purposes, where travelers found a place to eat and rest in, unlike city residents who were facilitated within a permanent place to live in Today the investment in that sector has rapidly increased by more than 17 billion Saudi Riyals (SAR) wherein it offers many jobs opportunities to Saudis.

Keywords: Riyadh, Restaurants, Supply chain management (SCM), Point of Sales (POS) system, Enterprise Resource Planning (ERP), Information Systems (IS), Financial Information Systems (FIS), Saudi Arabia, Restaurants, Cafe, Managing restaurants

1.0 INTRODUCTION

Supply chain management (SCM) has become significantly important in the service sector because customer satisfaction is dependent on how efficiently supply chain activities are carried out. Restaurants' operation is where every individual customer satisfaction matters a lot in continuity of the business. A large and diverse range of supply chain related factors are gathered to manage and effectively cater the requirements of customers, and then service is planned to execute. The purpose of this paper is to examine the effectiveness of Enterprise Resource Planning Software (ERP) in Supply Chain Management (SCM) in Quick Services Restaurants specially in McDonalds.

According to the General Authority for Statistics of Saudi Arabia (2015) there are 15,782 restaurants operating in Saudi Arabia and the highest in number in Makkah 5,186 restaurants while Riyadh being capital recorded with 3,245 restaurants. According to Riyadh Chamber of Commerce and Industry, restaurant sector classifies by their market contribution into three segments: fast food restaurant 56%, full-service restaurant 35%, and coffee shops 8% (Bouznif *et al*., 2018). Today, businesses are trying to develop cooperation with the supply chain members (supplier, manufacturer, distributor, retailer etc.) to achieve their strategic objectives. These efforts are directly connected to end-to-end supply chain management (SCM). Regular coordination and control, striving to reduce costs and continuous improvement in the process to increase profit are common across businesses. The profitability, productivity and efficiency are key output of a healthy management of an internal process of the business. A strong relationship with vendors, manufacturers, distributors, retailers, and customers are essential parts of supply chain in an Enterprise Resource Planning (ERP) system. Application of ERP in business administration provides savings on costs such as time, labor, and energy, and thus enables realization of profitability and customer satisfaction collectively with prompt and accurate flow of information. Restaurants can create safer and more cost-effective supply chains thanks to efficient usage of ERPs in the supply chain of both fixtures and daily consumables. Especially, it becomes more important to make use of modern ERPs in SCM to have a better control over cost of short shelf-life food items, minimize waste and an uninterrupted supply.

McDonalds in Saudi Arabia has been franchised by two locally owned companies namely Riyadh International Catering Company (RICC) serving to central and eastern part of the country and while Reza Food Service Company Ltd (Reza) managing the operation in the western and southern part of the country. McDonalds' operation started in early 1994 in Saudi Arabia (Bouznif et al., 2018) since then over the past 27 years both companies have opened 298 restaurants in the country. RICC has contributed with 185 restaurants while Reza has contributed with 113 restaurants and the journey to open more restaurants is going on. McDonalds being the market leader in QSR business in the kingdom holds 27% of total fast-food market share (Bouznif et al., 2018). This study focuses into RICC's supply chain operational model on the implementation of ERP application and to analyze how effective this application in the process of strategic planning, demand planning, supply planning, procurement, warehousing and distribution. When assessing the current operational model of RICC and the software application in use, company uses Store Management System (SMS) for its front-end sales and restaurant's operational activities and this software and technology include direct selling tools such as KIOSK and point of sales (POS), McDonalds Delivery System (MDS) further restaurant's stock keeping, food cost management and replenishment are too managed by SMS. Every McDonald franchisor should use this system as it is a mandatory clause of franchised contract. Meanwhile all other back of the house activities and the administrative activities are integrated with an ERP except company's digital marketing activities. RICC deals with over 400 40ft containers a month and it was noted that it uses over eighteen thousand metric tons of French fries annually (Quarder, 2021).

Before 2017, company had used number of software applications for its overall operations such as Human Resources Management system (MENAMI) for all human resource functions such as attendance record, leave management, pay roll calculation and end of service benefit management. Performance Development System (PDS) for the performance appraisal of the employees, accounting and finance were on another software platform, warehousing and inventory management had been managed with a warehouse management system (WMS), complete procurement process, order management including vendor management and logistics had been managed with a separate software application. In addition to above, SMS application for restaurants' operations were too managed by the company with the support of principle. Digital marketing and E-commerce platforms such as web-based portal for online customer

ordering and management of mobile application for customers who orders with mobile phone were amongst them as well (Shiraj, 2021). It had been quite challenging as to bring most of operational and administrative functions under mainstream software whereas integration of SMS which is owned by principle had been required series of approval and limitations (Shiraj, 2021).

1.1 Context of the Study

Supply chain management is the connectivity between key stakeholders in the whole chain up-stream and down-stream. As per global supply chain forum: the definition of SCM is the integration of key business process from end-user through original suppliers that provides product, services, and information that add value for customers and other stakeholders (Croxton, 2001). SCM in hospitality industry means information, material and money, flow of coordination and integration of the network of suppliers, customers, distributors, and manufacturers (Lee, 2000). SCM refers more of doing business electronically. The main area of SCM can be explained in five areas and they are strategic planning, marketing and sales, logistics, information technology, and finance (Genc¸, 2009). Logistics can be understood as the time related positioning of the resources in the supply chain.

The study of supply chain of an organization cannot be properly addressed by examining separately with its functionalities such as strategic planning, supply planning, purchasing, inventory management, distribution channel. This kind of perception slows down the development of SCM (Lummus, 1999). The supply chain should not be considered as a single process, it should be considered as matrix of components that can be measured and controlled by management. The use of ERP in supply chain is to keep up to date information across the chain members thus provide the perfect balance of supply and demand. It is evident that every business aims to maximize its profits nevertheless the philosophy of supply chain objectives with its ERPs to increase the value of all the chain members so that ultimately the customer will have benefit (Frazelle, 2002).

2.0 LITREATURE REVIEW

2.1 ERPs and supply chain relationship

Enterprise system, also known as ERP system (Enterprise Resource Planning), ERP a software system, which is an integration of activities such as finance, accounting, human resources, customer demand, supply, production, marketing, sales, distribution and allows the flow of information. ERP systems support in general recurring and continuity of the business processes such as SCM, order management and payment transactions. Information in ERP systems, the connection between all the activities and operations in a supply chain (Hugos, 2006). Without information integration, few gains can be made in overall supply chain integration (Lee, 2000). Information technology developments that enable sharing of information on demand throughout the entire chain, inventory can reduce costs by between 2.2 and 12.1 percent (Cachon, 2000).

Sound decisions can be taken only when timely, accurate, relevant, and full information is available. This simple formula, unfortunately, cannot easily be applied unless an ERP is in place. To obtain the desired quality and quantity of information an ERP will assist the decision maker when facing the most complex problems. Beyond a good software and system set up, SCM needs personnel with the ability to communicate and establish good relations with suppliers. To be successful in different areas of knowledge in ERP is necessary to utilize in SCM. In the hospitality sector, the elements of management of an ERP can be grouped as form, human, information technology and application procedures. When we think of ERPs, information technology usually comes to mind. However, in the use of ERPs, ERP is for people who are the decision-makers. The human element in ERP far more important for businesses such as hospitality, which gives priority to the quality of service. The human component in the ERP is the most important factor to ensure the continuity and success of an ERP. Besides management expertise, the human element must be able to work as a group and be willing to share information.

Policies that cover the operational processes of supply chain, standard operating procedures, contracts, key performance indicators, organizational matrix, job descriptions, business contacts and information flow charts and similar documents with an explanation of

the data collection and reporting tools and forms of information are the tools to be considered within the scope. The procedures, the formation of a standard and reliable business model haves been provided with different kinds of people. Thus, efficient, and effective work environment and controlled processes are rolled out.

To stay competitive in the market, organization must create an environment in which there is a controlled sharing of business data and processes, thereby enhancing the effectiveness of information interchange among business partners and suppliers (Lee, 2000). As the nature of the business and the environment is becoming more and more dynamic, what actions can businesses take to predict and prepare for change. To accomplish this, it is essential to have a system for establishing the status of a business at any moment in time in relation to its performance objectives. For any firm, the cost reduction programs that deliver the promise through value engineering, is challenging. Generally, firms would look forward to using predictive modeling technique to forecast the probabilities for success in the firms' new product line but identifying dead or obsolete stock and manage it through product aging strategies is a challenge for supply chain process (Ranjan, 2008). It has been identified that the competition is not between the organizations, but it is between the supply chains. To face this competition, supply chain members are now coming together as a part of a well-established system to improve the performance of the whole supply chain system. The high adoption costs of joining inter-organizational information systems and information sharing under different operational conditions with the use of ERP's of organizations may bring value between supply chain members. Further information regarding orders, end customer demand, desired level of inventory management, capacity, production schedule, and point of sales data may be shared to reduce the gap between supply and demand (Arshinder, 2007).

Integrating information systems that of ERP's across supply chain partners that facilitate information sharing is crucial in enhancing competitiveness. Thus, as a facilitator, Inter-organizational information system (IOIS) enables organizations to quickly identify consumer requirements and communicate the information throughout the supply chain. Such IOIS enable organizations to gather, process, and disseminate information and data across the supply chain (Rajaguru, 2011). It is important for supply chain members such as procurement professional, warehousing staffs and in particular, the logistics service providers, to

communicate through peers in performing the same function or activities. Therefore, to enable effective activities throughout the chain integrating the supply chain activities, an efficient information-sharing environment is mandatory to exchange relevant information thereby visualizing the logistics processes status between up and down stream supply chain parties (Harry & Chow, 2007). Coordination and integration in supply chains and networks are required information sharing among the members of the supply chain. Accordingly, the visibility and availability of the information of relevant information for making supply chain related decisions is an important concept in the context of supply chain management (Suparna Goswami, 2013).

A good decision is based on timely, accurate, relevant, and full information. This simple formula, unfortunately, is not very easy to apply. To obtain the desired quality and quantity of information is one of the most complex problems facing the decision-maker. Beyond a good software and system set up, SCM needs personnel with the ability to communicate and establish good relations with suppliers hence an effective system is required (Kaya, 2012). Integration throughout the supply chain improves scalability, flexibility, agility, and adaptation to changes, and supply chain planning using process and activity integration. It has been found that for successful business performance a high level of process integration is considered critical. Furthermore, another important aspect for enhancing supply chain performance is connectivity between various supply chain parties/ processes. Performance improvements in terms of cost, quality, variety, and service level can be attained through enhanced integration (Tiwari, 2020). Possession of an ERP system by both manufacturing and supply companies, as well as the interconnection of these two ERP systems between these two supply chain partners, allow for a seamless informational infrastructure to exchange data between the two afore mentioned chain partners. Through an ERP system, information regarding inventory level, number of orders, production rate, etc., can be accurately shared between the manufacturer and its supplier, at the right time, and at a low cost (Oghazi, 2018)

The main cause of disruptions in the supply chain is related to a gap or untimely communication, which results in material delivery delays and shortage of stock. Disruption recovery is achieved through a mix of the two recovery strategies. Practices such as a flexible process and reconfiguration of supply side while re-visiting inventory levels with the use of

ERP's allow companies to change the production, orders or while putting on hold certain activities to overcome most of the disruptions related to a sole supplier delivery (Dario Messina, 2020). Further study shows in a senior level perspective, adopting software systems with the execution of cloud SCM may revolutionize the traditional SCM system, the organizations upgrading and transforming SCM with this new cloud-based model, in a way that will reduce costs and the time spent on information transfer while at the same time enhancing flexibility and effectiveness and improving performance and enabling to users to access data from anywhere (Meichun Lin, 2020). It is observed that Blockchain Technology-enabled (BCT) supply chain efforts at present mainly enabled operational supply chain capabilities, which are information-sharing capabilities and coordination capabilities. Looking at strategic supply chain capabilities, mainly, integration capabilities and collaboration capabilities. It has been identified with the analysis carried out recently that the operational capabilities of information sharing, and coordination are more widespread in blockchain technology enabled supply chain systems than are the strategic capabilities of integration and collaboration. Improved process efficiencies, product and service quality and flexibility, reduced cost over reduced process time are key success performances factors of blockchain enabled supply chain system with the use of ERPs (Madhavi Latha Nandi, 2020). Cloud computing, big data, Internet of Things, artificial intelligence, and other emerging information technologies, blockchain technology is not a single information technology, but relying on existing technology, with original combination and innovation, so as to realize the functions that have not been realized before. When it comes to customer transaction cost it can be either downstream or upstream of the supply chain and the risk generated by information irregularity could be avoided or reduced with the use of blockchain enabled supply chain system ideally with an ERP. (Peng Xie, 2020)

2.2 Enterprise resource planning architecture

Functional areas known as an intensive knowledge production and knowledge-based decision-making are the middle management level of these sections. The upper management level information within the business is used at the least amount and at the broadest terms of use, and top management focuses on the interaction between business and the outside world. Functional ERPs are based on the basic business functions can be examined in the form of

service production, marketing, human resources, finance, and accounting. These are SCM, customer relationship management (CRM) and knowledge management systems (KMS). Each of these modules of ERP configured with the logic of ERPs operated by associating with each other. ERP systems give companies the flexibility to respond rapidly to a customer request while producing and stocking inventory only with what is needed to fulfill existing orders. Their ability to increase accurate and on-time shipments, minimize costs, and increase customer satisfaction adds to the firm's profitability (Laudon, 2009).

SCM systems, as described previously, help businesses manage relationships with their suppliers and the other stakeholders across the chain. CRM systems help firms manage their relationships with customers. CRM systems provide information to coordinate all the business processes that deal with customers in sales, marketing, and service to optimize revenue, customer satisfaction, and customer retention (Laudon, 2009). KMS enable organizations to better manage processes for capturing and applying knowledge and expertise. These systems collect all relevant knowledge and experience in the firm and make it available wherever and whenever it is needed to improve business processes and management decisions (Laudon, 2009). The members of the supply chain such as supplier, manufacturer, distributor, retailer, and customer and those operating in the sub-units such as department, section, individuals must be in contact with each other. This information allows members of the supply chain network to act as a single enterprise. This increases the importance of building a full-time ERP. Information on the supply network is common knowledge to all members of the supply chain and can be accessed at any time. Information sharing based on SCM, supply chain and the chain of communication between departments within an enterprise with members of their own communications network ERP extremely important in terms of supply chain efficiency.

2.3 The role of financial information in SCM of Restaurants

Accounting ERP a subsystem concerned with business assets and resources caused by activities and detecting changes that can be measured with money, monitoring, valuing, and transmitting results. On many issues such as production and operating costs, pricing, profit planning, customer value, pricing, purchasing, leasing, financial performance and valuation, recovery of investment, support for decision-making are provided with information supplied from the accounting software modules attached to ERP. An important part of this information

is a base of supply chain planning. Information from front-end transaction processing (POS) is sent to the back office for distribution to the stakeholders. At the same time, resources are procured by back-end functions for distribution to the frontline operations. The most back-office functions fall under the jurisdiction of the accounting and finance department. Today all accounting functions are automated through accounting computer software, which consist of computer networks used to report business transactions and economic events that occur within a hospitality chain (Tesone, 2006). For example, supply chain transactions occur as part of the procurement processes that are used to acquire material resources for use in the Restaurants. The financial performance evaluation of SCM holds together with members of supply chain, by identifying problems, directing strategic solutions, and allowing monitoring of the implementations of the strategies (decisions) and evaluation based on the direct cost and profit performance goals (cost reduction, increasing sales, increasing profits, reducing investment in inventory, accelerate ROI, and so on). With the use of ERP, determine the status of realization of the information produced by the accounting software. Further, supply chain structured competencies are evaluated with indicators by processes, technology, and business structures.

3.0 DISCUSSION

The basis of the SCM approach lies in information and communication technologies. Information and communication technology are good solutions to problems arising from the complexity of buyer-supplier supplier-supplier, and supplier-distribution center and SCM (Gunasekaran, 2004). ERP is a competitive tool for data collection, data processing through a process of conversion of knowledge, information storage and transmission to users, when required. Enterprise resource planning includes computer-based software, hardware, communications, and all the interface elements. For healthy management of this process, enterprise resource planning software should be compatible among members of the supply chain; procedures should be determined with each other. Radio-frequency Identification (RFID) technology in ERP still low despite the widespread use of Electronic Data Interchange (EDI) and ERP systems (Olorunniwo, 2010). EDI transfers of business data from a standard computer to the other partner's computer application. Most importantly, EDI imposes a one-to-many architecture for communications between supply chain members (Kahl, 2000). For EDI it is necessary to have EDI standards, the conversion software and the ability to

communicate (Genc, 2009). EDI permits the electronic exchange of inventory information, purchase orders, invoices, and funds transfers to settle accounts (Tesone, 2006). Most importantly, EDI imposes a one-to-many architecture for communications between supply chain members (Kahl, 2000).

The development of management ERPs has created the opportunity for global networking via internet, intranets, and extranets. There are numerous opportunities to expand open systems aspect for restaurants. The only limitation for current and future hospitality managers are their imaginations (Tesone, 2006). Hospitality organizations that use IT capabilities enhance their competitive edge. Customized solutions, business collaboration, and flexible organization structures all provide what the customer is looking for when doing business with a firm (Tesone, 2006). One thing to always remember is that in order for an information technology system to generate a positive return on investment (ROI), it must either reduce costs or increase revenue in some quantifiable way. While a hospitality professional may not remember everything about detailed ROI calculations or ERP minutiae, he or she can always fall back on this most basic premise (Nyheim, 2005). Even though the characteristics of ERPs and information technology used by businesses are different, nowadays, the internet makes it largely possible to share information among companies. Naturally, supply chain applications become web-based applications.

4.0 CONCLUSION AND FUTURE STUDY

Communication and information sharing among members of the supply chain provides for more effective decision. To achieve this, businesses should invest in infrastructure and use enterprise resource planning tools effectively and efficiently on ongoing daily operations. Within an ERP system, each department in the supply chain is inter-dependent, and cannot function if information has not been provided by previous links in the chain and back and forth. The most important parts in this information process are efficient use of ERP system that triggers up to date vital information for decision making. ERP should be applied based on cost-benefit trade-off, keeping up to date and be developed with continuous learning & adopting. The role of accounting has too been eased as the prompt availability of financial information within the supply chain thus making accounting process easy. SCM practices can be performed more efficiently and more profitably in the back of the house functions too. Management

trends and preferences are moving in this direction. However, investment and the ability to apply ERP currently under development. Restaurant management should develop long-term cooperation and share more information with supply chain members. SCM should be supported by modern enterprise resource planning tools to make it easy to evaluate enhancing practices. The most important result of successful supply chain applications is the decrease in total costs. However, the resistance encountered in supply chain applications is that the companies do not want to show their internal structures to other businesses so that the desired cost benefit across chain cannot be achieved. Despite there are draw backs in application of ERP in SCM in quick service restaurants, there are many benefits gained by using modern ERPs. Improved time management, cost control, increase profitability, time related positioning of consumables leading to customer satisfaction and increase speed of response to innovations are direct advantages of using ERPs in Supply chain management. Further, in competitive business environment it is witnessed that most of the QSR operations are not limited to a single restaurant, but it keeps on putting up more restaurants in order to increase market share and to have better use of resources thus reduction in costs eventually becoming a chain of restaurants. hence the use of an ERP is essential in order to manage its flow of supplies and information to function its services and quality decision making.

It has been observed while working on this article that there are still plenty of opportunities to study how and once stop ERP solution can help restaurant chain to come up with a fully integrated solution to their entire operations such as menu engineering and menu management, calory calculation and management, point of sales (POS) integration with central inventory system and back of the house activities, customer visits, customer retention and other loyalty programs, marketing campaign and their effectiveness. Furthermore, the concept of farm-to-fork food supply chain integration is another area of food supply chain to making sure safe, nutritious, and sufficient food is available for sustainable growth. It was noted that very little literature is available on farm-to-fork concept and related technology used. The QSR operators in Riyadh such as McDonalds, Pizza-hut, Burger King, Dominos, KFC, Herfy, Tim Hortons, Hamburgini, Steakhouse, Subway, Chili's, and Starbucks still use two or more systems in their full operations to function as a restaurant chain. It is evident that for menu management, sales, and home delivery operations, they do use POS and Kiosk system while back of the house functions are carried out by different software applications or part of ERP's

if not conventional model such as Microsoft office tools. Furthermore, entire supply chain connectivity across food supply chain with the restaurant's sales and inventory are also required more research and it was noted that very little research has been done on this area however further studies into ERP's that can connect all stakeholders in the full supply chain upstream and downstream would help restaurant operators to make more informed decision bringing the industry to next level. As QSRs become larger and larger where number of restaurants are on the increase, while integrating to organization's ERP outsourcing has been a solution to certain functions of the organizations such as warehousing, logistics, last mile delivery and marketing are few amongst them and studies connected to these areas are also very minimal and researching into this area would help QSR operators to make quality decisions as to what to operate internally and what not to.

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