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Integration of Knowledge Management in E-CRM: A Collaborative Study

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Abstract

The paper aims to present a collaborative study on Electronic Customer Relationship Management (eCRM) and Knowledge Management (KM) within four dimensions; technology, knowledge, customer and business based on Resource-based View Theory (RBV). With comprehensive knowledge about customer, SMEs organisations with web presence can provide more customised products and services to individual customers. Hence, the proposition of this paper is the success of e-CRM performance can be improved by interweaving knowledge management concept.

This approach is based on four models of CRM, eCRM and KM which are within four dimensions which are technology, knowledge, customer and business based on Resource-based View Theory (RBV). The study identified that CRM Development Stages Model and Balance Scorecard Perspective of eCRM Model provides better fit to the four resource dimensions which in turn can develop a KM-based eCRM model. This paper concludes that eCRM system designed to support KM must be linked closely to the ideas that within the domain of eCRM which can be decentralized and contextualized.This research had only focused exclusively on conceptual and models of past researches; a comprehensive user study, extensive performance and scalability testing is left for future work.A key contribution of this paper is the four models of CRM, eCRM and KM which are analyzed with the four dimensions i.e. technology, knowledge, customer and business based on Resource-based View Theory (RBV)

Keywords: CRM; eCRM; customer; knowledge management; performance; resource-based view; integration; collaborative.

1. Introduction

This paper discusses the relationship between knowledge management concept and e-CRM efforts. The academic nature of this paper explores how eCRM, manifest itself in the form of a knowledge management system (KMS henceforth), to enhance its efforts within the organization. Many SMEs progress in the globalized business environment portrayed greater efficiency and effectiveness. The battle gain competitive advantage is rapidly increasing day by day due to the dynamic nature of business environment. This has produced increase pressure on management of SMEs to become world-class enterprises (Lu & Beamish, 2001), In attempt to reduce their manufacturing cost, improve product quality, respond to their customers and other business partner, its highly needed to concentrate on their customer's needs and expectations are in a better situation to gain long term success when compared to others(Louis et al., 2016)

With this view, many SMEs firms have made substantial investment in information technology and especially in Internet/Web-based technology (Grandon and Pearson, 2004; Harrigan et al., 2010-2011;Solaymani et al., 2012) to invest huge amount of money to implement Customer Relationship Management (CRM) to sustain in this turbulent environment. CRM can improve business intelligence by making better decisions with cordial customer relations, along with good quality of services and product offering (Tae, Cheol, and Ingoo, 2005) and hence there is a heave in the CRM solution.

Gartner has estimated that CRM software market had exceeded $7.4 billion (£3.6 billions) in 2007, up by 14 per cent from 2006.The rapid growth in the Internet technology is the key enabler for eCRM functions to be delivered in a more effective manner. The Internet technology provides an incomparable opportunity for better relationship building by means of strong interactivity and personalizability (Tae, Cheol, and Ingoo, 2005). Hence, web-based CRM software is increasingly popular option for many organizations and it's becoming an important issue for marketing strategies and their subsequent implementation. eCRM encompasses all aspects needed to acquire, maintain and build customer relationship all the way through e-business operations (Clark, Yunxuan, Han, Cheong, and Billy, 2005, Yan, Chang, and Ying, 2006)

eCRM aims at attracting and retaining customers who are economically valuable simultaneously eliminating the economically invaluable ones (Romano, and Fjermedestas, 2003). Though eCRM promises improved customer service and loyalty, Gartner claims that 65% of all eCRM projects have failed and this is expected to increase to an even higher rate of 85% (Kimiloglu, and Zarali, 2009). Anderson Consultants also found that 64% of the variation in return on sales between high and average performing companies is mainly due to eCRM capability. These evidences indicate that a good implementation of an eCRM can make the organizations more successful.

According to (Coltman, and Dolnicar, 2004), while the payoff from eCRM programs is a growing issue in marketing and IT research, at present there is no robust relationship between eCRM investment and performance. Review of the literature about CRM shows that performance measurement is one of the less popular areas of research in this domain (Kimiloglu and Zarali, 2009). In support, (Hasan, and Tibbits, 2000). Hassan and Tibbits (2000), noted that measuring the performance of the implementation of IT applications and IS projects has grown to be considerably important in order to assess whether the investments proposed to these areas are meaningful. Review of CRM by (Ngai, 2005) which encompasses the period 1992-2002, categorizes the major areas in CRM research, claimed that studies relating to performance management are scarce. Noticeably the focus seems to be on why and how to engage in eCRM applications rather than on evaluating the performance of CRM (Kimiloglu, and Zarali, 2009).

The current climate of eCRM shows that high rate of failure and the rate is expected to increase in future (Kimiloglu, and Zarali, 2009). Hence, it is important to measure eCRM performance to ensure whether the investment directed to this area is fruitful. Additionally, at present there is lack of studies related to eCRM performance. Many researchers in this domain stress that there is growing interest on knowledge management (KM) in transferring the customer data to meaningful information. This is evident in the table 1 below which shows the KM as one of the lowest number of research. This paper therefore, seeks to explore the literature review to ascertain the relationship between knowledge management and eCRM performance.

This paper proceeds as follows. First section describes literature review on CRM, eCRM, and knowledge management. Next, the paper discusses the methodology of this paper. The section continues with the highlights on findings of the research. The paper concludes with the researchers' discussion on the KM concept in improving the E-CRM performance.

2. Literature Review

2.1 Customer Relationship Management (CRM)

Traditional marketing had focus on how to win customers but CRM centers around both wining and retaining customers. "Retaining customers is more profitable than building new relationships" it is very true in the internet marketing (Jeong, Serk, and Kyung, 2003).

The CRM paradigm has brought a tremendous change in traditional marketing. CRM had evolved from business processes, like relationship marketing and improved customer retention through valuable and efficient management of customer relationship. Few authors had explained that CRM is an approach which is based on maintaining positive relationship with customers, by increasing their loyalty and expanding their customer lifetime value. CRM primarily revolves around marketing and starts with an in-depth analysis of customer behavior. A 3 stage model of CRM shows how customer relationships can be managed. According to the model, customers are first acquired via clear communications and an influential value proposition and are retained through good quality services; and finally the relationship is extended using proper delivery of tailored products/services to a clearly defined customer segments. This indicates that CRM makes use of information and communication technology (ICT) to collect data, and analyze it to provide all needed information in order to have a more personal and cordial interaction with the customer (Lopez, Nicholas, & Castillo, 2008, Goldenberg, 2000)

CRM, if properly implemented can be a multifunctional, customer-driven technology which integrates business process management strategy which tends to maximize the relationship throughout the organization (Goldenberg, 2000).

Despite the benefits derived from the system, the CRM failure rate is still high (Zablah. Bellenger, and Johnston, 2004). In 2001, the failure rate of CRM projects had increased from 55% to 75% (Kotorov, 2003). CRM can be classified into three levels namely strategic, operational, and analytical (Buttle, 2004).

Strategic type deals with creating the customer centric business culture which in turn creates a better value over competitors by making them to take better investment decisions. The operational type is concerned about customers' processes automation, and service automation. Operational CRM is concerned with automation and streamlining the workflow especially at the front office collecting data, processing transaction, at the sales, marketing and services (Lun, Jinlin, and Yingying, 2008, Zhang, Chen, and Fu, 2006)

The analytical CRM roots from operational CRM and scrutinize customer data in order to create information regarding the segmentation of customer and their behavior, as well as their value to the organization through data mining (Gefen, and Ridings, 2002, Dyche, 2002).

2.2 eCRM

eCRM has been defined by (Lee-Kelley, Gilbert, and Mannicom, 2003) as "the marketing activities, tools and techniques delivered over the with a specific aim to locate, build and improve long term customer relationships to enhance their individual potential". Internet is highly essential to understand the unique distinction in the customer behavior, their choice and opinion about the company products and services. eCRM is not only about technology but also about alignment of business processes with customer strategies (Rigby, Richheld and Scheffer, 2002). According to (Anton, 1996), emphasis must be placed on the management of customer relation with "continuous improvement" or reengineering for better services and competitive positioning.

From previous researches, five major eCRM research areas were identified namely, eCRM markets, eCRM knowledge management, eCRM business models, e-CRM technology, and eCRM human factors out of which the least popular area was knowledge management (103,28%) still an emerging field which certainly need more impetus and attention from academicians(Romano and Fjermedestas, 2003)

Management of customer information is a prime success factor in eCRM. Proactive and practical use of internet technologies smoothen the process of collection of customer information from all possible customer contact points by combining other relevant data in order to develop customer insight(Payne and Frow, 2006) which in turn will enable the organization to predict the future behavior and personalize offerings towards more valuable customers. eCRM process is classified into the front-end and back-end process. eCRM starts with the front-end tool when customers visit or browse the company's website. Customers browsing activities will be captured by a cookie file and logged in a server for initial profiling purposes. This will allow the company to understand customer's surfing pattern which would be very useful for future marketing strategy eCRM is not able to function effectively without the support of a well-built back end system that utilizes the power of intelligent agents and database engines. (Noor Raihan, 2005).

A very powerful retention tool in Ecrm is personalizing the experience of valuable customers especially those 20% who contribute to the 80% of the company business that will provide noteworthy long term rewards.

Customer support aspect is yet another crucial tool which will build trust. "Contact Us" or "Help" button promotes the company brand and build trust.

2.3 Knowledge Management (KM)

Knowledge management is a concept of systematically collect, share, organize, store, disseminate and apply knowledge in an organizational context to improve the visibility and usability of knowledge.

Knowledge management encompasses a wide range of disciplines. Groupware, decision support systems, expert systems and other forms of collaborative systems are examples of technology related to knowledge management (Gupta and Sharma, 2004)

Knowledge can be viewed from several perspectives for example "as a state of the mind, as an object, as a process, a situation of having access to information or even as a capability" (p.109). A single knowledge can be tacit or explicit (Nonaka and Takeuchi, 1995).

KM facilitates the selective application of knowledge from past experiences during critical moments of decision making currently as well as in future leading to a well efficient organizational practices. In addition, the dynamic nature of eCRM, coupled with different inputs and requirements from various eCRM stakeholders, creates the information overload to the managers which can prevent timely and accurate decision making. A well tested KMS in this context can help to decide which areas to look at, and what sort of decisions to focus on, well in advance.

KM is an action discipline and knowledge should be used in order to have an impact. CRM relies on the use of knowledge from both historical and current transactions in order to generate current and future action plan and procedures. Lessons learned practically enable eCRM managers to prepare a well-structured strategic plan.

2.4 Theoretical Background

The resource-based view theory (RBV) stipulate and recommend that the main driver of firms resources are the main driver of performance enabling them to achieve competitive advantage which leads to superior long-term performance. Empirical studies pertaining to firm performance using the RBV have found vast differences between firms in the same industry, as well as groups within industries suggesting the significant effect of individual firm-specific resources on performance. Resources that are attributing to the core competencies will lead to gain competitive advantage which can sustain over a longer period of time. In general, empirical studies have strongly favored the resource-based view. Researchers interested in the RBV have used a variety of terminology to talk about a firm's resources, including competencies (Garg and Prahaled, 1990), skills (Rajiv and Sarv 2003), strategic assets (Garg and Prahaled, 1990), assets (Raphael and Paul 1993), and stocks (Ross, Beath, C.M. and Goodhue, 1996) and these have been problematic for research as it is unclear about the key terminology and its meaning.

Information system researchers have highlighted the potential of the RBV and related theories to provide explanations as to how and why firms can derive strategic value from IT investments (Guoquan, 2005).

Proponents of the RBV suggest that the competitive advantage of the firm could be the organizational resources, capabilities, and competences that are valuable, unique, rare, difficult to imitate and difficult to substitute. This topic had been debated for almost two decades by Information Systems (IS) researchers and IT business value research, investigate the impact of IT investment on firm performance. Though the proposition on computers does not improve the productivity (Jason, Vijay, & Kenneth, 2003), researchers are still trying to find how IT improves firm performance (Bharadwaj, 2000). Meta-analytic studies on IT business value came up with two directions for future research viz., application of RBV of the firm which explains IT business value, and further research which helps to identify management practices which might complement IT in establishing the business value.

RBV believes that competitive advantage and better firm performance can be achieved by effectively combining the resources which are unique, valuable, rare, and hard to imitate (Barney, 1991). Studies based on IT business value reveal that RBV theory explains how IT investments can be changed into firm performance (Michael, and John, 2004)

Researchers have identified tangible and intangible resources that are complementary to IT. Firms can gain competitive advantage by effectively identifying and assembling resources that work together in order to create organizational core competencies (Santhanam, and Hartono, 2003) and they tend to measure the firm's ability to combine many resources effectively and efficiently to achieve the preset objective (Coltman, 2007, Dutta, Narasimhan, and Rajiv, 2005)

3. Integrating eCRM and Knowledge Management

KM emphasises the practice of applying the knowledge selectively from previous experiences too make good decisions (Jennex, 2005). Interweaving KM into eCRM tends to improve the CRM's effectiveness and helps to understand the customer to provide superior services. In addition, we further add that given the dynamic nature of market, coupled with different customer expectations, a CRM or sales manager and related departments therein, are subjected to information overload, which can prevent timely and accurate decision making. A well-integrated.

CRM with KM characteristics in this context can help to decide what to look at, what decisions to focus on, and what decisions can be made automatically and/or in advance.

According to (Bose, and Sugumaran, 2003) in order to integrate marketing, sales and service activities, CRM requires integration of all the business processes involving customers. Customer knowledge constitutes the following:

They should understand what customers really want, which is usually called as knowledge about customers (Garcia, Munillo and Annabi, 2002). Customers know well about the products and services they use as well as about how they view the offerings that led to the purchase. This knowledge from customers is valuable as it helps to improve the products and services. Efforts needs to be made to channel this knowledge back into the enterprise (Garcia, Munillo and Annabi, 2002)

4. Methodology

The research approach for this study is based on secondary data. Two recent customer knowledge management models and two eCRM models that are closely fit to the topic were selected. The papers were selected from the result of search on keywords – knowledge management and CRM for KM-CRM models and eCRM for eCRM

models. The search was launched in five major online databases – Emerald, Science Direct, IEEE Xplore, and MIS Quarterly. These models were then analyzed in terms on its characteristics and elements that contribute to an effective integrated KM-based eCRM. The findings were presented in the proceeding section.

5. Four Models on KM-CRM and eCRM

Two models that discusses on KM concept for implementation of CRM are as follows:

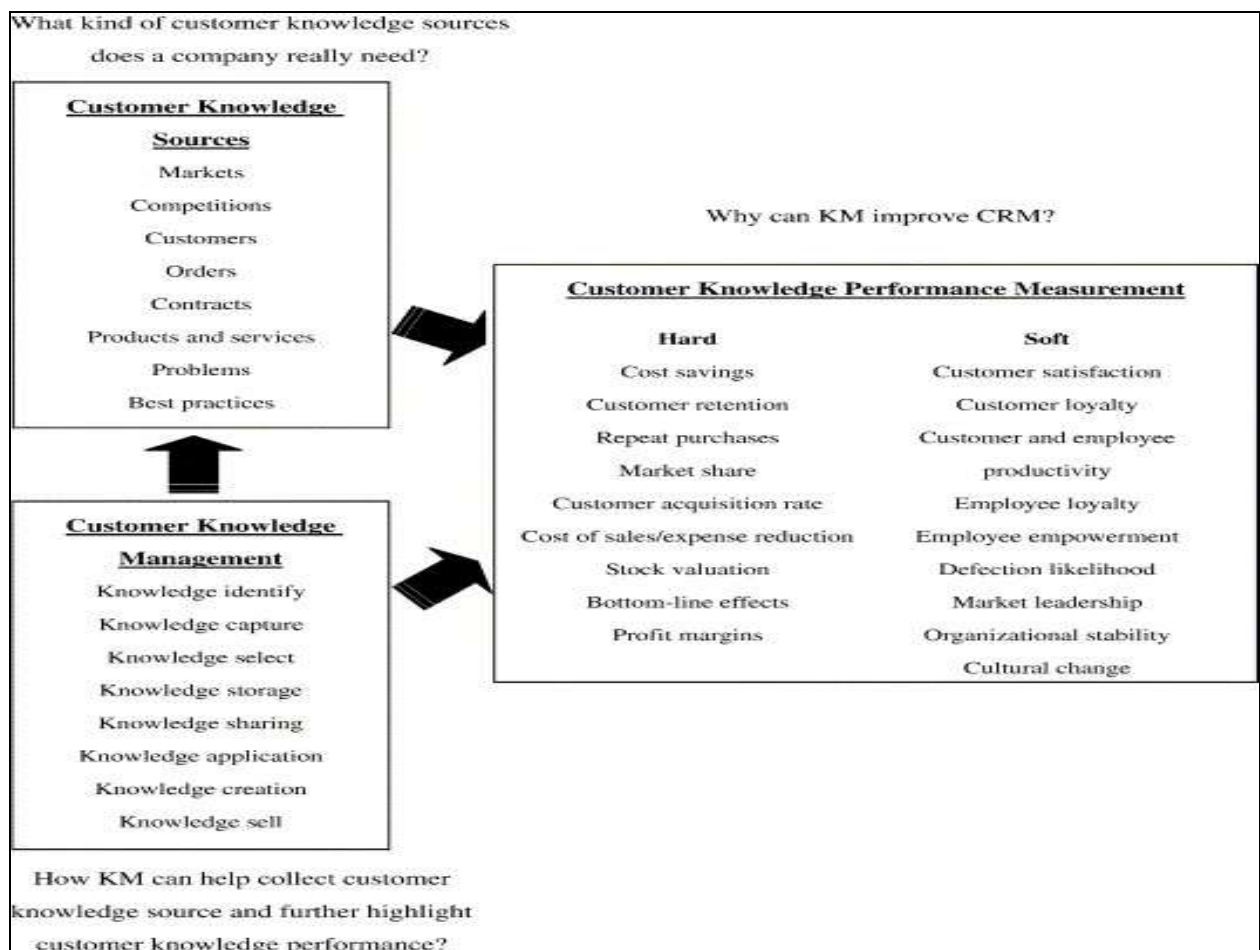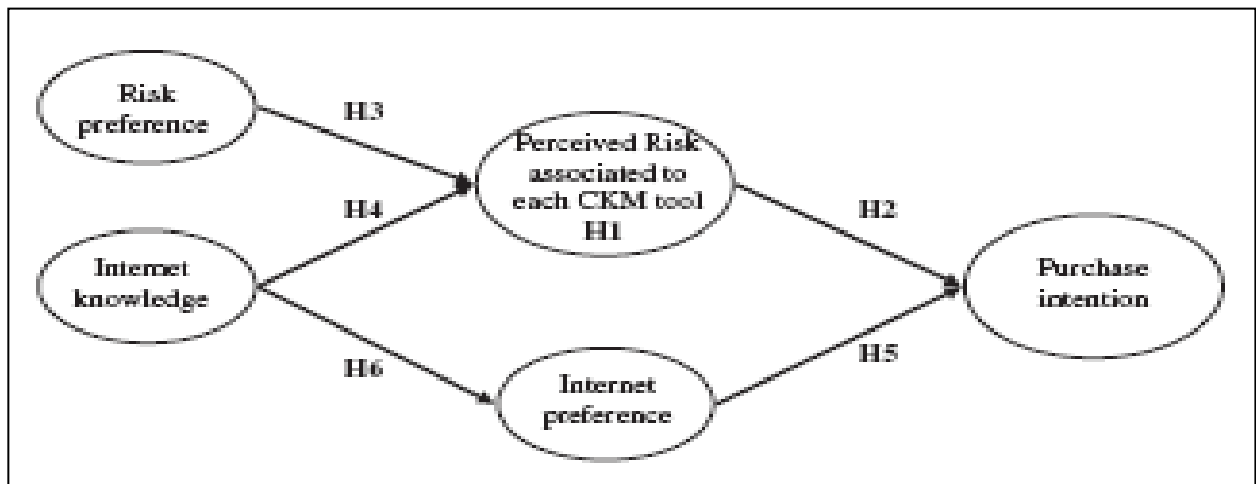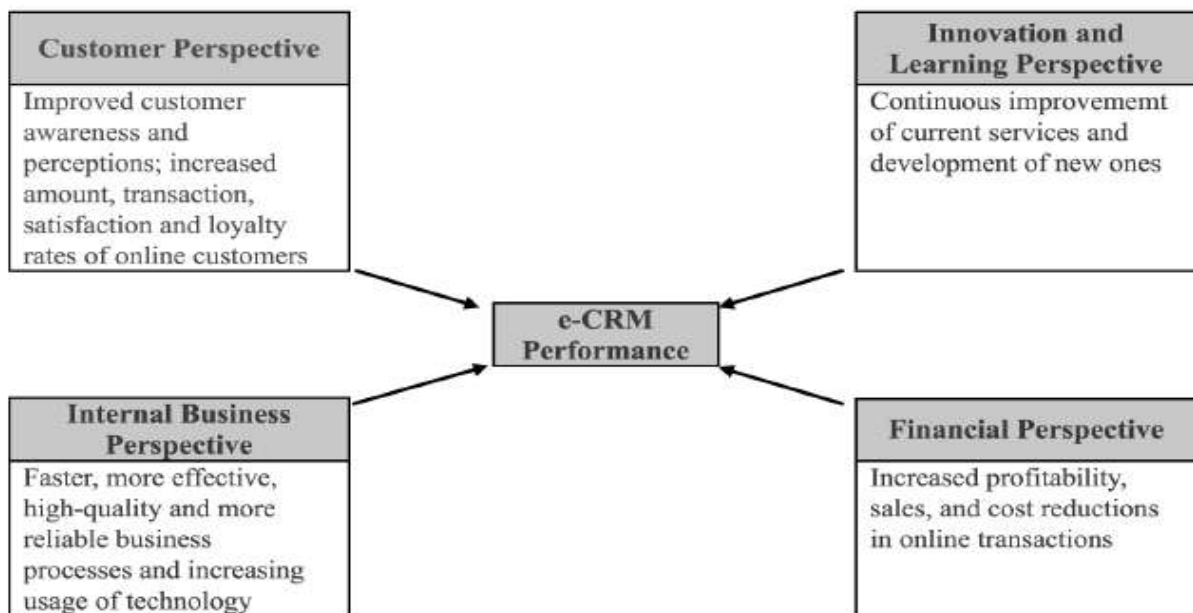**Figure 1**. CRM Development Stages Model - Stefanou and Sarmaniotis (2003)
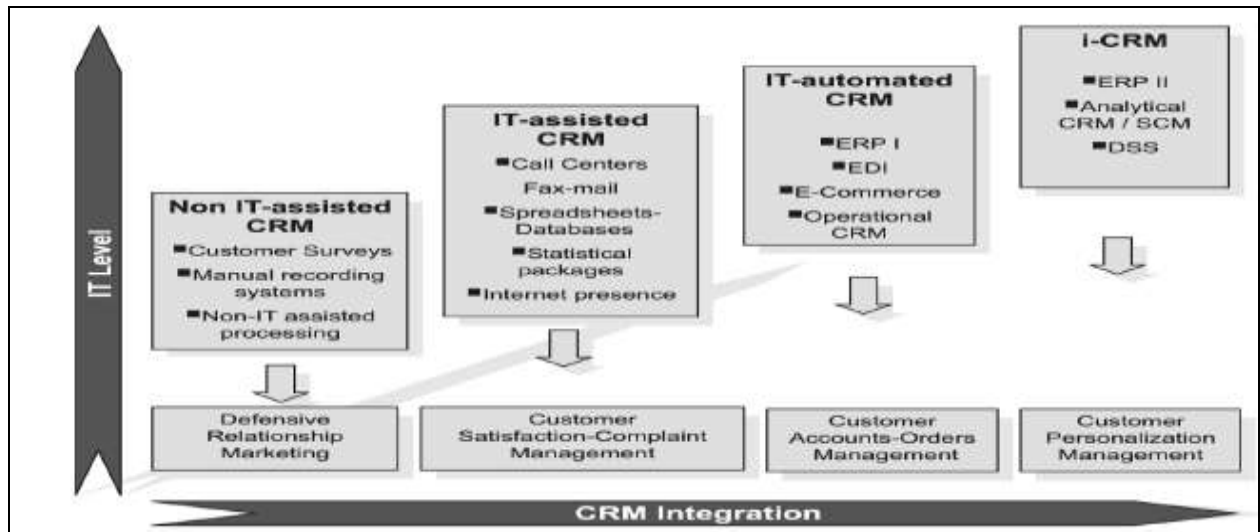
Figure 2. Knowledge CRM Model – Lin, Su and Chien (2006)

Figure 3. CKM Model for e-Commerce - Nicholas and Castillo (2008)

Figure 4. Balance Scorecard Perspective of e-CRM –Kımılogˇlu and Zarali (2009)

6. Outcome

Based on the RBV theory, any firm should focus on their key resources and evaluate the resources based on four main criteria which are valuable, rare, in-imitable and non-substitutable. Firms should care and protect their resources in order to improve organizational performance (Barney, 1991) and achieve competitive advantage. In line with this theory, the four models were analyzed based on four major competitive dimensions such as technology, customer, knowledge and business. The resulting findings are presented here.

Table 1- KM-CRM Models and E-CRM Models in Four Resource Dimensions.

Dimensions KM-based e-CRM	Figure 1 - Stefanou andSarmaniotis (2003)	Figure 2 – Lin et al (2006)	Figure 3 – Nicholas & Castillo (2008)	Figure 4 – Kımılog˘lu and Zaralı (2009)
Technology	IT Level	Unclear tie	Perceived risk associated to each CKM tool	Increasing usage of technology
Customer	• Customer Satisfaction-Complain Management • Customer Accounts-Orders Management	Unclear tie	Perceived risk Internet preference	• Improved customer awareness and perceptions • Increased amount, satisfaction, transaction, and loyalty
Knowledge	Customer Personalization Management	• Customer-knowledge sources • Customer knowledge management	Internet knowledge	• Learning • Development of new services
Business	Defensive relationship marketing	Unclear tie	Unclear tie	• Faster, more effective, high-quality and more reliable business processes • Continuous improvement of current services
Net Benefit	Effective KM-CRM	Performance – hard & soft	Purchase Intention	e-CRM Performance

In comparison to all the four models, (Kimiloglu and Zarali, 2009) and Gebert, Geib, Kolbe, and Brenner, 2003) seems to be covering all of the dimensions mentioned. Kımılog˘lu and Zarali's model (2009) is from the E-CRM category and Stefanou and Sarmaniotis (2003) is in KM-CRM category. Figure 2 and 3 have unclear elements for business dimensions. This gives a better view of the dimensions that can be focused on in developing a KM-based e-CRM model.

7. Discussion

Based on the above outcome, we agree with Jennex's (Jennex, 2008) claim that we need KM to help organisation to make sense of what they know, to know what they know, and to effectively use what they know based on the following reasons:

i.   to help organisations identify, capture, store, and retrieve critical knowledge.

ii. to help us deal with the transience of knowledge workers.

iii. to help organisations manage a glut of knowledge

We therefore reinstate that importance of KM for eCRM is evident. Implementing knowledge management systems in organizations can help to increase competitiveness (Krogh, 1998) and lead to greater innovation and responsiveness (Hackbarth, 1998). An organization's ability to survive given dynamic changes within its environment is contingent upon its ability to quickly respond to change (Burnell, Priest, and Durrett, 2004). This includes among others the ability to effectively manage its customer knowledge resources. Assert that "an effective knowledge-based organization is one that correctly captures, shares, applies and maintains it knowledge resources to achieve its goals" (p.203). This echoes the view of (March,   and Simon 1958) who states that successful organizations are able to adapt to any dynamic environment. The information processing theory states that the role of having accurate and up to date information is vital particularly when organizations deal with large pool of customers (Burnell, Priest, and Durrett, 2004). Implementation of a knowledge management system that can eCRM managers to proactively respond to ever-changing customer needs will benefit an organization (Burnell, Priest, and Durrett, 2004).

eCRM implementation by interweaving KM concept promises 3 benefits to organizations: (i) enhanced visibility of customer related knowledge in organizations through the use of maps, hypertexts, yellow pages; directories etc. (ii) building knowledge sharing culture i.e. create avenues for employees and customers to share knowledge and (iii) a knowledge infrastructure, not confined to technology solely, rather create an environment that permits collaborative work (Lee-Kelley, Gilbert, and Mannicom, 2003). This implies that knowledge management systems can support an organization in planning for and dealing with customers effectively.

It could be inferred and ascertained that any eCRM designed to support KM, must be linked very closely to ideas that are within the domain of eCRM. A specific technology that was selected to support eCRM should lead to knowledge that can be decentralized, and contextualized. Open source systems viz., Wiki technology might be a choice for organizations that tend to use and design any information system to manage customers. Open source systems will be ideal for knowledge that is instable, dynamic and decentralized (Raphael and Paul, 1993). However, technology alone cannot be sufficient to promote effective eCRM-KM but need an effective design and usage considerations. The following are essential when we think about integrating KM into eCRM:

•   A "fit" between the knowledge management system and CRM policies should be there. In other words, technology should support CRM initiatives and should not act as hurdles.

•   eCRM organizations should cultivate acknowledge sharing culture between entities that are involved in the process.

Adoption of eCRM with KM integration being widely practised in various sectors. Healthcare organisation has adopted eCRM which is widely recognised as electronic health record. eCRM help healthcare professionals store and process various types of clinical, administrative, and financial data about their patients, and they often interface with systems, such as remote medical monitoring devices, billing, health insurance, public health surveillance, and patient-centered web portals . Past researches show that accurate and complete interoperable electronic clinical records can lead to more efficient healthcare processes, improved clinical operations, better governance, improved research data, increased adherence to guidelines, decreased medication errors, and facilitation of effective management and communication (Ronnie, Nava, and Lior, 2014).

8. Conclusion

As remarks, this paper is timely especially in a situation where there is lack of research pertaining to KM and eCRM. The researchers have extra miles by integrating four models, two each from KM and eCRM models to develop a KM-based e-CRM model based on Resource-based Theory. The findings of this paper contributes to the existing knowledge of eCRM and RBV in the domain of KM. Future researchers may expand this findings by conducting an extensive search on models in the domain of KM and develop more integrated and comprehensive model for business firms to have a clear vision on how to improve performance and competitive advantages through an effective KM-based eCRM.

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