

A Proposed Model of the Effects of IT Diffusion on Organizational Absorptive Capacity and CRM Innovation Success

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Abstract: Business to customer (B2C) e-business has opened many new opportunities for businesses. In response to studies that underscore the importance of maintaining strong and learning relationship between the organization and customer, many have turned to customer relationship management (CRM) to manage their interactions with their customers and other external entities. Although IT enables CRM, other organizational factors, such as organizational absorptive capacity's effect on innovativeness, may have greater impact on its ability to continually satisfy the business' customer needs and expectations. However, IT may be a critical element to both absorptive capacity and innovation. This study examines the relationship between IT diffusion, organizational absorptive capacity and innovation, and proposes a research model. A clearer understanding of these relationships will provide businesses a means to appropriately direct their investments in IT and absorptive capacity.

Keywords: Customer relationship management, absorptive capacity, information technology diffusion.

I. Introduction

In recent years, businesses have begun transitioning to e-business models and consequently engaging in customer relationship management (CRM). Information technology (IT)-enabled e-business has opened many new opportunities for business organizations, yet reaping the rewards of these opportunities has required them to adopt more advanced IT-enabled means. In contrast to their traditional markets and business models (i.e., brick and mortar business models), many businesses are finding themselves immersed in highly competitive, consumer driven global markets conducted over the Internet, and competing against virtual alliances, organizations that collectively work together in either horizontally or vertically integrated partnerships that are facilitated by IT. Continual advances in IT have fueled this drive in competitiveness to new heights, and in cases such as the airline industry [13], have changed the way business is conducted. Thus, IT has not only changed the competitive landscape, but it also requires businesses to seek innovative

IT-based solutions to better leverage themselves.

On the consumer side, the market potential is enormous. For 2008, Jupiter Research forecasts that half of the US population will purchase their goods and services online through the Internet (versus 30 percent in 2004) and the estimated spending per buyer will average \$780 (versus \$585 in 2004); this translates to \$117 billion in sales. In contrast, Forrester Research predicted that online retail volume for 2004 would reach \$100 billion. Yet, profiting from electronic marketplaces will require businesses to become highly knowledgeable of their environments and customers. Thus, competitive threats and market opportunities are driving businesses to intelligently innovative applications of IT to ensure their longevity and survival. Market demands and expectations make IT a necessary resource to effectively compete, especially in global electronic marketplaces.

Business to customer (B2C) e-business poses several new challenges to businesses. The shift from mass marketed to micro-segmented, tailored products and services has forced businesses to establish and build closer learning relationships with their customers. As a result, many have turned to customer relationship management (CRM) to manage their relationships and interactions to gain greater insights into their (customers') needs and expectations [35]. However, their success with CRM lies in their ability to continually innovate to meet changing market conditions and customer needs, and gain competitive advantages through products and services that cannot be easily duplicated, imitated or substituted [29], [44]. This implies that businesses must be capable of not only learning from the entities of their external environment (i.e., customers, suppliers and other sources of information), but also to be able to leverage and exploit their organizational knowledge to innovate. Thus, conceptually, CRM's success hinges on how well the business *absorbs* pertinent information about its customers and applies the knowledge it has gained toward developing products and services that closely fit their needs and expectations. An organization's absorptive capacity, the ability to recognize and assimilate information and apply its cumulative knowledge toward a profitable gain [11], defines this ability.

Yet, the ability to innovate may not sufficiently meet the demands of highly competitive markets. The *speed* at which electronic markets operate becomes the underlying concern.

A common definition describes CRM as a process that utilizes technology to capture, analyze and disseminate current and prospective customer data to develop deeper and more insightful relationships, and identify and more precisely target products and services to specifically match their customers' needs [30], [35]. Thus, IT assumes a critical role in CRM performance since it may boost the business' abilities and subsequent productivity (*speed*). However, Grover et al. [19] cite inconsistencies in the results of studies that have examined the effects of IT investment on productivity do not lend an overwhelming endorsement to the relationship between IT investments and productivity (i.e., IT investments increase productivity) and suggest the presence of an intervening variable, perceived process change. Their study suggests that perceived process change's mediating effect on the relationship between IT investments and productivity (i.e., requires process change) is stronger and more consistent than its moderating effect (i.e., enables process change). This indicates that IT must be coupled with other organizational changes for it to have a desired effect on productivity. They recommend further studies to explore the relationship. Therefore, *to what degree does IT contribute to an organization's CRM performance in terms of its absorptive capacity and innovative output (i.e., products and services)? Do greater investments in IT lead to higher levels of organizational absorptive capacity and innovative output?*

The purpose of this paper is to propose a model of IT diffusion's effects on an organization's absorptive capacity and innovation, and examine the relationship between them in the context of CRM performance. IT diffusion refers to the acceptance and adoption of new IT solutions implemented for purposes of gaining competitive advantage. Given that the primary purpose of implementing CRM is to gain unprecedented competitive advantages and all businesses strategically position themselves differently, all businesses will apply CRM differently to produce different results (i.e., product and service differentiation). However, its performance as measured in organizational and customer relationship benefits should reflect the *return* on its investment, the number of successful (i.e., profitable) innovations over the amount of knowledge collected. This study proposes that greater investments in IT as captured through IT diffusion will not only increase organizational absorptive capacity, but will also allow the business to reap greater benefits from CRM and provide more tailored innovative products and services to their customers. Thus, IT influences the effects of organizational absorptive capacity and CRM performance. Absorptive capacity will be examined in terms of its ability to leverage and exploit organizational resources in contributing to CRM success. Understanding these relationships will provide businesses a means to direct their investments in IT and absorptive capacity.

II. CRM, Innovation and Absorptive Capacity

CRM is commonly recognized as an information system to assist the customer retention process or a methodology that extensively employs information technology (IT), particularly database and Internet technologies, to enhance the effectiveness of relationship marketing practices. It allows an organization to listen to its customers and customize its products and services to meet their personal needs [29], [30], [35], [44]. In consumer-driven markets where switching frequently occurs, successful businesses must be able to act quickly to seize opportunities through well-developed processes, maintain a wealth of information on their customers that is readily accessible, accurate and current, and leverage and exploit their knowledge and resources to sustain their competitive edge. CRM represents an IT-enabled system designed to meet these requirements. Experience suggests that a well-designed and implemented CRM will help ensure the longevity of a customer-business relationship, and enable the business to thrive in a consumer-driven market through such means as loyalty and (high) switching costs.

Often referred to as one-to-one marketing and relationship marketing, CRM allows organizations to individually focus on their customers rather than mass-marketing their products and services to broadly defined market segments [30]. It places emphasis on retaining existing customers [29] through such means as loyalty [26] since the greatest leverage comes from investments in retention rather than the generation of new customers [44]. Winer [44] cites a 1999 McKinsey study that strongly suggests repeat customers can generate over twice the gross income as new customers. Similarly, Reichheld and Sasser [32] reported that a 5 percent increase in the customer retention rate can lead to increases of 35 to 95 percent in average customer lifetime value (i.e., net present value of a customer). A survey conducted of 300 business executives underscores the importance of maintaining good customer relationships. It revealed that a one-point increase in an organization's customer satisfaction index (based on annual surveys conducted by the University of Michigan, the American Society of Quality and Arthur Andersen) corresponded to an average \$240 million increase in market (equity) value [40]. Building loyalty among existing customers often leads to increases in repeat-purchase rates and usage frequency, and raises barriers of entry into the markets as it makes it difficult for new businesses to court customers of established competitors [37]. Furthermore, the cost of acquiring new customers may be five times greater than that of satisfying and retaining current customers [31]. The Boston Consulting Group estimated that it costs a business \$6.80 to market to an existing customer via the web versus \$34 to acquire a new customer (via the web) [20]. Yet, building a long-term relationship involves more than innovating new products and services to meet the customer's needs. It also means delivering quality and value [21]. Given these rewards, it behooves most businesses to carefully plan, develop and invest in their CRM systems. Thus, the investment in relationship management can yield enormous and continuous returns; small increases to the number of repeat customers

frequently equate to large increases in profitability. Much of this success can be attributed to advances in IT that have allowed businesses to collect, retain and analyze customer data, gain greater insights into their customers' behavioral patterns, and innovate.

Effective investments in CRM and continual innovations increase customer switching costs through added value and trust [45]. Added value comes from the business' understanding of its customers' needs and targeting them through customization, one-to-one interactions, relevant promotions and information, and rewards and incentives. Each of these increases value since they may not be readily obtainable from other businesses. For the customer to receive the same benefits elsewhere, he/she would need to build another relationship. However, this would require the customer to entrust his/her personal information with an entity he/she may know little of. Consequently, the time involved with developing a new relationship will depend upon the pace at which the organization gains the trust of the customer. Furthermore, the customer must make investments in time and effort to convey his/her needs and personal information to the new organization. Therefore, the customer incurs several costs with switching. If the business maintains a healthy relationship (i.e., loyalty) and continually satisfies its customers' needs (i.e., does not provide the customer with reasons for shopping elsewhere), the cost remains high to the customer. Thus, continual innovation becomes a key factor in keeping switching costs high.

Innovation reflects the business' ability to understand its customers' needs, and leverage and exploit its knowledge into products and services. Thus, innovation can be used as a measure of CRM performance and is essential to CRM success. A general definition of innovation presents it as the development and successful implementation of new and creative ideas [3], [15], [42]. It includes processes involved with the generation (i.e., search and discovery) and acceptance of new ideas, processes, products or services [17], [18], [23], [41]. Innovations characteristically yield new techniques that are most likely superior to the ones they succeed [17], and lead to the achievement of higher levels of performance [22]. Hence, they embody improvements. However, the propensity towards adopting the innovation lies in the perceived benefits that exceed those of alternatives [4] and the added value perceived through adoption [36].

Organizational innovation depends on the collective creativity of employees and three basic environmental components: the motivation to innovate (i.e., competitive orientation as manifested in the organization's vision and mission), availability of resources, and innovation management skills (i.e., management support and skills that nurture creativity) [3]. In the absence of these components, innovations will lag. An underlying motive is the perception of capitalizing on unexploited technological and economic opportunities, and involves uncertainties (and consequently risks) in search activities and outcomes [17], [24]. Thus, economic gain or reward often accompanies innovation with

risks. Yet, the success of innovating products and services requires critical investments in the accumulation of knowledge [23], [24]. For this matter, Kanter [24] characterizes innovation as being knowledge-intensive, and dependent on how well an organization configured its knowledge to create new knowledge [43]. As a resource to innovation, IT advances information discovery and knowledge management, and thereby reduces risks.

Although IT serves as an underlying (i.e., necessary) condition, it may not be sufficient to ensure CRM success. IT will facilitate CRM success, but as in the case of other IT-enabled systems, the presence of organizational elements and factors that will benefit from IT will affect CRM performance. Since a fundamental objective of CRM is to translate the individualism of its customers to an array of differentiated product and service offerings, a business must rely upon innovative product and service discoveries that are developed through both the exploitation and exploration of information. This implies that an essential success factor of CRM lies in organizational knowledge and the organization's ability to leverage and exploit it. Prior studies [8], [11], [22] suggest that an organization's ability to link its knowledge to its innovations depends upon its capacity to innovate, the ability to successfully adopt or implement new ideas, processes or products. Similarly, Cohen and Levinthal [11] contend that innovations are products of an organization's absorptive capacity, its ability to recognize and assimilate new information, and apply the ensuing knowledge to commercial ends.

Zahra and George [47] define absorptive capacity as "a set of organizational routines and processes by which firms acquire, assimilate, transform and exploit knowledge to produce a dynamic organizational capability" (p. 186). The four capabilities interact and build upon one another to create a dynamic capability that leads to other organizational capabilities, such as marketing and production. The organizational change it (dynamic capability) produces is often strategic in nature. Yet, absorptive capacity largely depends on precursory learning (within the organization) and the dissemination and integration of subsequent knowledge [11]. As more knowledge is accumulated, the organization's absorptive capacity grows as its ability to recognize and assimilate information expands. Greater frequencies of learning reinforce prior knowledge and increase the organization's capacity to retain new knowledge, which in turn yields the application of knowledge to new scenarios [9]. A mechanism (i.e., process) to disseminate and share this knowledge becomes critical to developing innovative competitive advantages [27]. Because absorptive capacity will vary from organization to organization, product and service innovation success will vary accordingly, and depend on the knowledge it leverages and exploits.

This study posits that businesses with greater absorptive capacity will not only be more innovative, but will also more accurately meet and satisfy their customer needs. As a result, CRM will better position them competitively. Therefore, differences in CRM performance may be attributed to

differences in absorptive capacity. However, the IT an organization adopts may critically influence its absorptive capacity or its innovativeness.

III. Diffusion of IT and CRM Performance

The diffusion of IT in an organization concerns the extent to which it is adopted (i.e., accepted), and assumes the introduction of an innovative use of IT [7]. Because IT enables CRM, its diffusion may determine the extent to which a business can compete. Based upon innovation diffusion theory, the acceptance of new IT (innovation) hinges on the assessments and adoption of potential adopters who subsequently determine the adoption behavior in others [34]. Individuals regarded as potential adopters engage in information seeking behaviors to overcome a perceived uncertainty. Upon examining an innovation they view as a possible solution, they form an attitude toward it which eventually leads to a decision to adopt (accept) and implement the innovation or reject it. Given the relationship between innovation characteristics and innovation adoption, five key perceptions will influence an adopter's decision to accept IT: compatibility (i.e., perceived consistency with existing values, needs and past experiences), relative advantage (i.e., perceived advantage or improvement over the former method or technology), complexity (i.e., perceived difficulty to understand and use), trialability (i.e., degree to which it may be experimented with on a limited basis), and observability (i.e., degree to which the results of adoption are visible to others) [34]. The perceptions of compatibility and complexity are consistent with Bandura's [5] self-efficacy beliefs (i.e., behavior modification) and Davis' [16] perceived ease of use while relative advantage lends support to Ajzen's [2] outcome beliefs and Davis' perceived usefulness constructs. Trialability and observability provide the opportunity for potential adopters to expose and demonstrate IT-use to encourage others. They will communicate through the organization's formal and informal social system their information to others who they influence. The study of Agarwal and Prasad [1] implies that the perceptions of early adopters (in contrast to non-early adopters) will have a greater impact on adoption. Therefore, carefully planning an adoption strategy will greatly enhance IT's successful adoption [12].

In their study of the effects of absorptive capacity on IT use, Boynton et al. [8] suggest that IT management climate strongly influences an organization's absorptive capacity. They define IT management climate as management's attitudes and perceptions of IT's role in the organization, and are reflected in its planning orientation, vision and control structures. Bannister [6] further states that IT leadership contributes to forming the IT management climate. As they apply to IT diffusion, IT leadership and management climate create an atmosphere and culture that promote and facilitate the introduction and adoption of IT, and the dissemination of information throughout the organization, all crucial to diffusion. Thus, their studies establish the positive

relationship between IT diffusion and absorptive capacity as IT diffusion supports higher levels of knowledge development and intelligence gathering. Other factors that influence the adoption of IT include organization culture, knowledge sharing and learning [24], [25], [46], norms and opinion leaders [34].

The diffusion and deployment of IT will be unique to each organization due to its characteristics, particularly its accumulated knowledge [7], [28]. The interpretation of information entering the organization is contingent upon the organization's ability to recognize and link new information to its stored knowledge. Its current technology base (and the knowledge of that technology base) initially influences its perceptions and determines whether an innovative technology is deemed appropriate and useful. Furthermore, an organization's absorptive capacity may promote IT use (i.e., the greater the absorptive capacity, the greater the IT use) [8]. Once assimilated, IT's adoption and use depend upon the focus of the organization's knowledge. Applying the technology to non-complementary applications (i.e., applications that do not converge on a common body of knowledge) rarely occurs due in part to the organization's bounded rationality; organizations will adopt solutions that fit within the scope of their knowledge [28], [33], [38]. Additionally, an organization's interpretation of efficiency directs its emphases on different aspects of knowledge and how it applies its knowledge. An organization's means for converting inputs to desired outputs (based upon its interpretation of efficiency) determines its capacity to plan, coordinate, control and monitor the diffusion of IT [28]. Therefore, the content of IT in CRM will differ among organizations. Largely, it depends on the extent to which diffusion (i.e., adoption) has occurred, as determined by their focus and knowledge. This suggests that IT will facilitate absorptive capacity since IT will influence the development of absorptive capacity as it (IT) focuses the organization's intellectual resources toward achieving higher levels of performance (i.e., researching and developing innovative products and services) in specific areas of CRM. Hence, IT diffusion plays an important role in determining the extent to which new knowledge can be *absorbed* into the organization. The underlying goal is to create an environment of continual innovation.

IV. Proposed Model of IT and CRM Performance

A business' absorptive capacity plays a critical role in determining its CRM performance. The information the business learns from its customers and about pertinent market conditions will become part of its knowledge (through assimilation), which will eventually drive the innovation of products and services that directly target its individual customer's needs. To sustain its competitive position, its knowledge must also incorporate a sense of perceived benefits and added value over alternative offerings,

and featured qualities that cannot be easily duplicated, imitated or substituted. Continual innovation to meet these requirements and others imposed by changing market conditions requires continuous learning and knowledge accumulation. As more knowledge is amassed, the business' power to accumulate further knowledge and more precisely direct its innovative activities becomes greater. In this study, CRM performance will be based on the business' innovation output, and success can be tied to the organization's ability to leverage and exploit its knowledge with IT providing the means (for leveraging and exploiting it). As in the case of Cohen and Levinthal [11] and Stock et al. [39], the number of products and services produced through CRM can therefore reflect the organization's absorptive capacity. In the absence of organizational absorptive capacity, IT alone will be incapable of supporting CRM.

The proposed model of this study embodies the dynamic capabilities of absorptive capacity and their interrelationships [47]. In examining the relationship between IT diffusion and CRM performance (i.e., IT's contribution to CRM performance), this study proposes that organizational absorptive capacity mediates (i.e., require process change) the effects of IT diffusion on innovation. A mediating effect suggests that IT diffusion enhances the effects of organizational absorptive capacity on innovation (Figure 1), similar to the study of Boynton et al. [8] on the effects of IT management climate on absorptive capacity, and the ensuing effects of absorptive capacity on IT use. For IT diffusion to have an impact on innovation, IT-enabled process changes in absorptive capacity must occur among its capabilities. This may include devising new ways in which opportunities are recognized, information is acquired, assimilated and transformed, and knowledge is exploited. As a result, the effects of IT may amplify or enhance the effects of organizational absorptive capacity on innovation. Greater levels of IT investments within limits [39] may lead to higher levels of absorptive capacity and consequently a greater number of successful innovations (i.e., successful CRM performance) if process changes occurring in absorptive capacity take advantage of the investments.

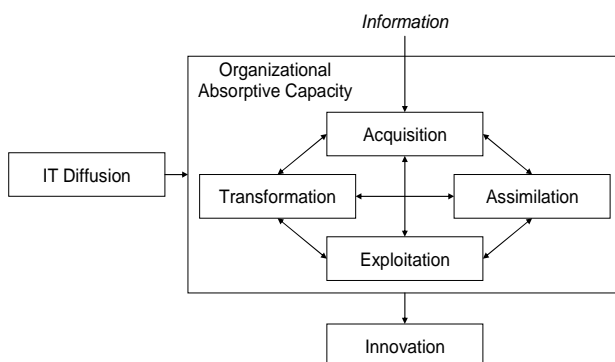


Figure 1. Proposed model with IT diffusion's mediated effect on innovation

Because IT enables CRM, its (CRM's) success hinges on how well the business has adopted innovative applications of

IT to maintain its IT sophistication throughout the organization. In dynamic global markets, changes can occur quickly and suddenly due to advances in IT. As new technologies become available, businesses must learn their benefits and examine ways in which their adoption can provide a distinct competitive advantage. If these advantages become apparent and supportive of the business strategy, the adoption of the technology must quickly be disseminated throughout the organization's work processes and activities. However, these advantages are often only short-term. As the technology becomes readily available, its mass adoption throughout an industry overcomes the advantages. Thus, the search for new technologies continues and IT diffusion becomes critical to a business' long-term profitability. Currently, innovations in network infrastructure, client-server computing and business intelligence application are leading IT factors in CRM development [10] that will benefit a business with their timely adoption. To ensure the quick adoption, the organization must have in place channels or an organization structure (i.e., social network) conducive to diffusion.

In CRM, the discovery of knowledge is a major component to its success. The business must focus on increasing customer satisfaction and loyalty through the information it acquires through its one-to-one relationships with customers and learns of market trends and other environmental factors that will impact future customer needs and expectations. IT can be used to quickly access information, retain volumes of data for future analysis, assess markets and transform the information it gains (i.e., data analysis) into knowledge. In electronic marketplaces, the speed and sophistication of knowledge discovery is a critical element. Absorptive capacity represents the learning and knowledge building component of CRM and relies upon IT for the discovery of new and retention of existing knowledge. Thus, IT diffusion leads to the introduction and adoption of new tools or processes that will benefit the *absorption* of new knowledge, leverage and exploit the organization's knowledge, and consequently seize opportunities and provide a competitive advantage. Prior studies have shown IT development supports higher levels of knowledge development and intelligence gathering [6], [8]. Hence, IT enables absorptive capacity.

Proposition 1. *IT diffusion will have a positive effect on organizational absorptive capacity.*

The purpose of building absorptive capacity is to leverage and exploit the organization's knowledge towards a commercial end [11]. It involves the business identifying its customers' buying behaviors and habits with granularity, integrating this information into an existing body of knowledge, discovering new knowledge from the information it has gained and applying its knowledge to innovate products and services that more precisely meet its customers' needs, preferences and expectations, thereby increasing their switch costs through quality and value not readily obtainable elsewhere, and providing at least a

perception of superiority or achieving a higher performance level. These innovations should possess a uniqueness that competitors cannot easily overcome and find difficult to imitate, duplicate and substitute the product or service to gain a competitive advantage. Internally, innovations may include improved processes or methods for customizing or delivering the products or services. Given these characteristics, innovativeness is knowledge-intense. By continually applying what it learns from its customers, the business will ensure the longevity and benefits of their relationship. Thus, the greater the resources that are committed to developing absorptive capacity, the greater the capacity of the organization to innovate and reap greater benefits from CRM (i.e., improved operating performance, customer retention, loyalty and satisfaction, repeat transactions, market share and opportunities, etc.); absorption capacity enables innovation.

Proposition 2. *Organizational absorptive capacity will have a positive effect on innovation.*

Prior studies indicate that IT has no direct effect on productivity [8] or CRM impact [14]. Instead, another factor will mediate its effect. A mediating effect occurs when variations in the independent variable account for variations in the mediator (i.e., intervening variable), variations in the mediator account for variations in the dependent variable, and when controlled the independent variable has no effect on the dependent variable. Hence, IT's effect on innovation must be mediated by an intervening variable; this study proposes absorptive capacity. Although IT diffusion opens opportunities for the expansion of innovations, IT by itself cannot be directly linked to innovativeness since it represents only a means (tool) for discovery. Yet, the development and expansion of knowledge in the form of absorptive capacity benefits from IT diffusion (i.e., proposition 1). In turn, increases in an organization's absorption capacity will lead to higher levels of innovations (i.e., proposition 2). The research model presented in this study proposes that innovations will benefit from IT diffusion if it targets knowledge development (i.e., absorptive capacity), a key element to innovations. If absorptive capacity is a mediator, IT diffusion will not have a direct effect on innovation, as suggested by prior studies. In this study, innovations reflect CRM performance as they are a result of CRM use in leveraging the organization's knowledge.

Proposition 3. *Organizational absorptive capacity will mediate the effects of IT diffusion on innovation.*

The purpose of the proposed model is to examine the roles IT and absorptive capacity play in the innovations aspect of CRM performance. In the ever-changing global electronic marketplace, a business' ability to continually innovate will contribute to its longevity through customer satisfaction and loyalty.

V. Practical Business Implications

In the past years, businesses have increasingly invested in CRM. Yet, according to the Meta Group, several implementations have either failed to go live (25 percent) or fallen short in meeting expectations (59 percent). AMR Research indicates only 16 percent are considered complete successes. This is in spite of the \$10.8 billion it estimates American businesses have invested in CRM software and services during 2004, a \$1 billion increase over the previous year. Although many of the failed endeavors have been traced to business change and adoption imposed by the new system, Forrester Research suggests successful CRM implementation have focused on delivering customer experiences.

Understanding the needs, preferences and expectations of customers with the goal of retaining them in long-term relationships is paramount to CRM. The competitive edge goes to the business that cannot only acquire the essential information containing customer buying habits and preferences but can profitably leverage and exploit the ensuing knowledge in a very timely manner. This suggests three implications to practice: IT should facilitate communications between the business and its customers and within the organization, businesses need to focus their investments in absorptive capacity on long-term innovative discoveries, and diffusion plays importantly to ensure the timely adoption of IT that will benefit the previous two implications.

Meaningful interactive communication is vital to building relationships in relationship marketing (RM) and CRM. It enhances the customer's experience by providing the business with information that will be used to target customer satisfaction and the customer with products and services that reflect his/her preferences. The particular value and benefits the customer derives from these offerings increases his/her switching cost through increased satisfaction, thereby raising uncertainties with patronizing another business. The more effective and efficient the means for fostering or facilitating the communication between the business and customer is, the greater the impact the communications will have on the business' absorptive capacity development. Communication within the organization and between the business and its partners (i.e., suppliers, distributors, etc.) ensures the business will benefit from its knowledge, alerts the business to shifts in its markets and helps expand its organizational knowledge. IT provides the means for delivering knowledge as a shared resource through a technical infrastructure and communication networks.

Because the development of absorptive capacity embodies a continuous learning process, investments in it should focus on the long-term discoveries of innovations. To maintain its long-term relationships with its customers, the business must continuously seek new products and services that they can recognize and associate with value and benefits. These innovative offerings will result from established learning relationships that feed an accumulated body of

knowledge. Innovations also involve new processes, such as the delivery of information, or products and services, that improve and enhance the customers' experiences. IT provides the means to quickly recognize new opportunities, accumulate and disseminate knowledge, and maintain the learning relationships.

Lastly, the diffusion of IT supports the business' CRM endeavors in communications and absorptive capacity. Competitive market forces play a major role in the adoption of IT, particularly those which provide a distinct competitive advantage. Enhancements to communication come with the adoptions of newer technologies, such as wireless devices that support mobile commerce (m-commerce) or ubiquitous commerce (u-commerce), and web technologies. Advances in IT have made data repository capacities in the terabytes common and data warehouses the focal points of business intelligence. The medium on which data are transported now supports transmission speeds in the gigabytes. Together these have opened new possibilities to enhance the customer experience (e.g., on-demand streaming video, personalized and customized products and services, etc.) and the diffusion of IT has become more crucial to the business' ability to leverage and exploit its knowledge to effectively compete in global electronic marketplaces. Because e-business requires the business and its partners to work as one to project a single image, an organizational structure and channels to ensure the rate and degree to which IT becomes embedded in processes and activities are important.

VI. Summary

The movement toward B2C e-business opens many new challenges to business organizations. Competing in highly competitive and consumer-driven markets has shifted business emphases from mass marketed to micro-segmented, tailored products and services that target the specific needs of customers. As a result, many businesses have turned to CRM to establish closer learning relationships with their customers and gain a greater understanding of serving them in hopes of building their loyalty and increasing their switching costs. However, CRM performance must be gauged by the business' ability to continually innovate products and services while remaining competitive. An organization's absorptive capacity becomes a critical element as it assimilates customer information (along with other information) and further leverages and exploits the organization's knowledge. Organizational absorptive capacity in turn forms the basis for innovations. Rapid changes and unexpected shifts in market expectations place additional demands on CRM to innovate quickly. Thus, the adoption of innovative IT may help in leveraging the organization's absorptive capacity. However, the effects of IT diffusion on absorptive capacity and innovation are uncertain. This study proposes the development of a model to further examine their relationships.

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