

An Empirical Study of the Relationship of IT Intensity and Organizational Absorptive Capacity on CRM Performance

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ABSTRACT

In recent years, e-business has emerged as a mainstream business practice for engaging in global markets. To gain a competitive advantage in these highly competitive markets, many business organizations have turned to customer relationship management (CRM), an integrated system that draws upon the strengths of IT, to allow them to gain greater insights into their customers' needs. This study examines the relationship of information technology (IT) intensity and organizational absorptive capacity to CRM practices and performance. Data collected through a survey of Taiwanese financial service companies generally suggest that CRM practices mediate the effects of IT intensity and organizational absorptive capacity on CRM performance. Thus, it behooves organizations that seek to compete in global markets to invest in developing both their IT infrastructure and organizational absorptive capacity, and apply these resources toward building their marketing intelligence and innovating products and services that meet their customers' needs and expectations.

Keywords: absorptive capacity; customer relationship management; information technology; market orientation; customer service

INTRODUCTION

Continual advances in information technology (IT) and the push for global marketing have led to the rapid expansion of global marketplaces and electronic business (e-business). In 1999, estimates placed business-to-business (B2B) e-business spending between \$92 and \$142 billion (Ah-

Wong et al., 2001; Kelly, 2000), and business-to-customer (B2C) at \$33 billion (Ah-Wong et al., 2001) in the U.S. Today, U.S. and worldwide B2B transactions have reached \$2.4 trillion and \$3.9 trillion, respectively, while U.S. B2C spending is forecasted to approach \$95 billion (Mullaney et al., 2003). Future B2C spending can be expected to shadow worldwide B2B spend-

ing, estimated between \$6 and \$7.3 trillion for 2005. Gartner (2002) estimates the current 216.7 million adult worldwide Internet users to double in 2005. Thus, many opportunities avail themselves to businesses that pursue global electronic markets.

Yet, as more businesses transition to e-business, competition in the Internet-enabled marketplace becomes keener. Many have turned to information technology (IT) for solutions that provide a strong competitive advantage. One such IT-based solution that has gained popularity in recent years is customer relationship management (CRM), frequently described as an information system to assist the customer retention process or a methodology that extensively employs information technology, particularly database and Internet technologies, to enhance the effectiveness of relationship marketing practices. Generally, greater investments in IT provide CRM with greater capabilities. With its broader acceptance, the focus of CRM research has shifted from the examination of development and application issues to the discussion of management-oriented issues, particularly those concerned with its successful adoption, implementation and deployment.

As a competitive tool, CRM tunes the organization into listening to its customers, and allows the organization to develop customized products and services that cannot be easily duplicated, substituted or imitated by its competitors, and subsequently more precisely match its customers' needs (Peppard, 2000; Winer, 2001). Given this context, the primary objectives of CRM involve attracting, developing and maintaining successful customer relationships over time (Berry and Parasuraman, 1991; Day, 2000), and building customer loyalty (Kohli et al., 2001) through efficient and effective

two-way dialogues (Peppers et al., 1999). As the customer-business relationship flourishes, both the customers and organization benefit (Yim and Kannan, 1999). Establishing these relationships becomes even more critical in e-business as the world becomes the marketplace.

Previous CRM studies have tended to focus on the virtues of using IT to improve organizational productivity and quality (Crosby and Johnson, 2001). However, as use became more pervasive, organizations discovered differences in their outcomes of CRM due to factors inherent to them. Recent studies now focus on identifying organizational factors that lead to the successful use of CRM, such as corporate culture, and process and technology improvement (Yu, 2001), and the alignment of people, processes and technology (Battista and Verhun, 2000; Crosby, 2002; Crosby and Johnson, 2000; Simpson, 2002). The results of these studies indicate that variations in these factors will affect the effectiveness of CRM. Therefore, CRM performance may vary among organizations due to organizational factors (all applications of IT being equal).

An important factor that may critically affect CRM performance lies in the organization's ability to leverage and exploit its knowledge toward innovating new products and services that benefit its customers. Previous studies (Boynton et al., 1994; Cohen and Levinthal, 1990; Hurley and Hult, 1998) suggest that an organization's ability to link its knowledge to its innovativeness (i.e., ability to innovate) depends upon its absorptive capacity, the ability to recognize and assimilate new information, and apply the ensuing knowledge to commercial ends (i.e., exploitation) (Cohen and Levinthal, 1990). Because absorptive capacity largely depends on precursory learning (within the

organization) and the dissemination and integration of subsequent knowledge, and is facilitated through resource availability, its level will vary among organizations. Generally, greater investments devoted toward developing organizational learning often through research and development (R&D) lead to higher levels of absorptive capacity, which in turn often leads to more successful results with CRM.

The purpose of this paper is to examine the relationship among IT intensity, organizational absorptive capacity, CRM practices and CRM performance.

IT INTENSITY

CRM can be seen as an IT extension of relationship marketing (RM), a new marketing paradigm that focuses on developing close personal relationships, interactions and social exchange between an organization and its customers and business parties over time to enhance the organization's competitive response to continually changing markets (Zineldin, 2000). CRM expands upon this concept through its emphasis on information management (Peppard, 2000), and further draws upon IT for its strength and capabilities.

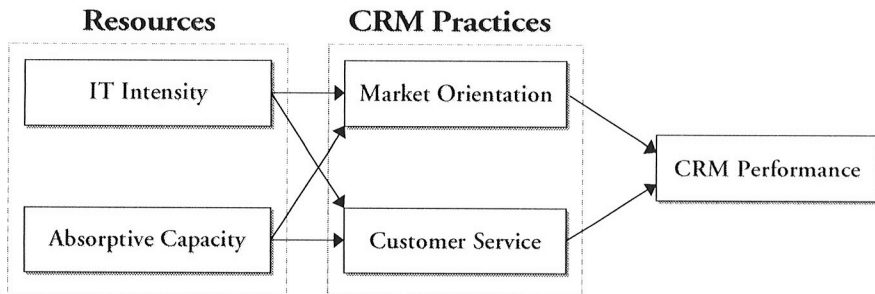
As an IT-enabled enterprise system, CRM's performance hinges on the resources and investments an organization commits to it. IT intensity refers to the IT infrastructure and applications that allow

the organization to benefit from its IT investments and apply them toward its best interests. An IT infrastructure forms the foundation on which CRM systems are built, and specifies the extent of its capabilities since the success of CRM depends in part on organization-wide information and knowledge sharing as it draws upon the innovative and creative thoughts of its people. Thus, CRM promotes an enterprise-wide solution rather than a narrowly focused functional area solution.

Henderson and Venkatraman (1994) suggest that an organization's IT infrastructure has two components: (1) a technical IT infrastructure, and (2) a human IT infrastructure. Duncan (1995) views the technical IT infrastructure as a set of tangible, shared, physical IT resources, including hardware and operating systems, network and telecommunications technologies, data, and core software applications. The technical IT infrastructure should integrate and interconnect the organization in such a way to efficiently and effortlessly route information through its telecommunication network (Rockart et al., 1996).

In contrast, the human IT infrastructure addresses the necessary individual skills and knowledge required to develop, maintain, manipulate and support end-users in their abilities to leverage the technical infrastructure. Osterman (1995) discusses the importance of developing and acquiring individual skills and roles to enable an

Figure 1: Research Model



organization's investments in IT. Without an adequate human IT infrastructure, the organization will realize very few benefits from its IT infrastructure and investments.

Investments in IT intensity have opened new marketing opportunities to organizations through efficiency gains (i.e., marketing process automation) and improved intelligence (Applegate et al., 1996). While marketing process automation helps link marketing activities to support information sharing (i.e., efficiencies), marketing intelligence aims to enhance decision making through tools, such as data mining and knowledge management techniques, that provide greater insights and lead to the discovery of new information. Although the continual advances in IT have led to more sophisticated marketing applications of IT (Stone and Good, 2001), these investments alone are not sufficient to sustain competitive advantages in global markets.

ORGANIZATIONAL ABSORPTIVE CAPACITY

Another organization factor that may have a significant influence on CRM performance is organizational absorptive capacity. The absorptive capacity of an organization results from the cumulative learning activities of its individuals and the transfer of knowledge within the organization through a common language (Cohen and Levinthal, 1990). Learning activities occur with new experiences directed toward exploration (i.e., research), routine experiences and training. These activities help develop knowledge that can be used to recognize, acquire and assimilate new information and apply the ensuing knowledge. The more frequent learning occurs, the greater the accumulation process, which in turn reinforces prior knowledge, in-

creases the capacity to retain new knowledge and yields the application of knowledge to new scenarios (Bower and Hilgrad, 1981). As a result, the greater the knowledge possessed and shared throughout the organization, the more the organization will be inclined to *absorb* new knowledge, and apply it toward innovative, creative and effective products and services. Leveraging becomes greater as knowledge becomes pervasive in the organization.

In developing and maintaining their relationships, organizations must be capable of applying their knowledge toward understanding the reasons that make their customers unique, and tailoring their products and services to accommodate their uniqueness (Massey et al., 2001; Morgan and Hunt, 1994). Thus, like IT intensity, absorptive capacity enables the organization, but through knowledge.

CRM PRACTICES: MARKET ORIENTATION AND CUSTOMER SERVICE

Market Orientation

Market orientation can be defined as the organization-wide generation, dissemination and responsiveness to market intelligence, and involves information sharing among multiple departments engaged in activities directed toward meeting customer needs. In contrast to product-driven marketing, which focuses on pushing end products into markets while promoting lower prices and good quality, market-orientation concentrates on continuously detecting customer needs and quickly filling them. As a means for promoting customer-centric values, market-orientation practices often have positive effects on the organization's performance and new products. However,

given the underlying need to share information and knowledge, market-orientation becomes dependent on the organization's IT-intensity for its success. Previous studies have focused on performance implications (e.g., Matsuno and Mentzer, 2000), measurement (e.g., Homburg and Pflesser, 2000), and antecedents and performance outcomes (e.g., Jaworski and Kohli, 1993).

Customer Service: Customization and Loyalty Programs

Two fundamental components to customer service are customization and loyalty programs. The objective of customization is to tailor products and services that more precisely fit the individual customer's needs. Pine et al. (1995) describe customization as a learning relationship between the organization and its customers that results in delivering products or services in direct response to a particular customer's needs and preferences over time. Dialogs that increasingly lead to collaboration and loyalty, and further cultivate the relationship, underlie the success of customization. In contrast to mass-marketed items, customization adds value that cannot be easily obtained elsewhere. Gaining this knowledge requires eliciting customers for ideas and integrating this information into the production processes such that it provides the organization with its greatest competitive advantage (Pitta, 1998).

Mass customization attempts to customize products and services for the individual customers to reach a one-to-one marketing level. Compared to traditional product differentiation which strives to change the product's characteristics to competitively distinguish it from another's offering, mass customization achieves differentiation through targeting the product's

or service's benefits toward satisfying the customer's specific needs. The advances in IT make mass customization more feasible as they allow individual customer behavior and characteristics to be traced and analyzed with greater detail through data warehouses and data mining techniques, all of which make customer service easier and solution-oriented (Kalakota and Robinson, 2001). The organization can then quickly identify its customers' needs and preferences, and translate them to products and services.

Loyalty programs link organizations to future opportunities. The development of loyalty programs frequently lead to increases in repeat-purchases and usage frequency, and raise barriers of entry into markets by making it difficult for new entrants to court customers away from existing businesses (Sharp and Sharp, 1997). The market research studies of Hughes (2001), and Reichheld and Sasser (1990) strongly suggest that loyalty programs can increase business revenue and total customer market share.

RESEARCH MODEL AND TEST OF HYPOTHESES

This study proposes that an organization's investments in IT and absorptive capacity will indirectly benefit its CRM performance. Both will have greater effects on how it applies CRM through its practices, and its practices will be a greater determinant of CRM performance success. Figure 1 illustrates this study's research model. The model suggests that CRM practices will mediate the effects of IT intensity and organizational absorptive capacity on CRM performance. IT intensity and organizational absorptive capacity represent the independent variables, while CRM practices a mediating variable, and CRM

performance the dependent variable. The following hypotheses and sub-hypotheses are presented to test the model.

IT intensity reflects an organization's commitment to technology. The greater the investments, the more reasonable it is to expect greater achievements in other areas. IT has been attributed as the enabler of many opportunities, particularly as a means for increasing efficiencies and a tool for securing competitive advantages. Methods, such as online analytical processing (OLAP) and data mining, have allowed organizations to improve their intelligence gathering abilities to discover new information and knowledge about their markets and customers. IT has also enabled them to quickly and efficiently disseminate and share information across organizational boundaries, thereby empowering employees to make decisions that are consistent with the organization's goals and objects, and benefit the interests of both the organization and customer. In maintaining a competitive posture, organizations must also be able to anticipate competitive threats and adjust accordingly to maintain their customer base with novel and customized products and services that aptly meet their (customers') needs and expectations, and cannot be readily duplicated, imitated or substituted. IT can be used as the means to ensure customer feedback is integrated into the design and production of future products and services. Thus, IT intensity should facilitate the organization's market orientation and customer service, such that greater investments in IT will lead to more sophisticated and enriching CRM practices.

H1: IT intensity has a positive relationship with CRM practices.

H1a: IT intensity has a positive relationship with market orientation.

H1b: IT intensity has a positive relation-

ship with customer service.

Absorptive capacity underlies organizational knowledge. It allows the organization to recognize and assimilate new information into its existing body of knowledge. As a result, the more information that can be absorbed into the organization and shared among its members, the greater the organization's knowledge will be, and potentially, the more information it can absorb in the future. Organizations that have amassed knowledge of their market requirements and customers' needs will be inclined toward practicing marketing intelligence and information sharing to produce knowledge, and leveraging information and knowledge to garner even greater levels of customer loyalty. Essentially, knowledge will affect the extent to which an organization focuses its market orientation and customer service.

H2: Absorptive capacity has a positive relationship with CRM practices.

H2a: Absorptive capacity has a positive relationship with market orientation.

H2b: Absorptive capacity has a positive relationship with customer service.

In highly competitive, IT-enabled marketplaces, all business organizations must stay in tune with the needs and expectations of their customers. Many have turned to CRM not only to retain their existing customers and win new ones, but to profit through both efficiency gains and new opportunities. Assuming the organization has made firm commitments to adopting critical IT and developing its knowledge and absorptive capacity, the enabled CRM practices should increase CRM performance, in particular organization and customer benefits. Essentially, understanding the customers' needs and tailoring products and services that more precisely meet

their needs and expectations will lead to benefits for the organization and customer. Organization benefits involve achievements, such as cost reductions, increased profits resulting from repeat purchases (customer loyalty) and greater efficiencies (information sharing, empowerment), and one-to-one marketing success.

Gwinner et al. (1998) have identified four perceived benefits customers receive beyond the core service attributes, including social (personal recognition, friendship and fraternization), psychological (confidence, trust and reduced anxiety), economic (monetary and time savings) and customization (preferential treatment, special services or consideration, and history development). Of the four, psychological benefits remain invariant over service types and therefore provide more frequent benefits. Strong market orientation lends greater support towards ensuring the customers' needs and expectations are understood and acknowledged. Thus, greater achievements in CRM practices should be associated with greater CRM performance.

H3: CRM practices have a positive relationship with CRM performance.

H3a: Market orientation has a positive relationship with CRM performance.

H3b: Customer service has a positive relationship with CRM performance.

Organizations will eventually derive benefits from their investments in IT and R&D. IT intensity and absorptive capacity represent the fundamental enablers of CRM. Because CRM is IT-enabled and involves the leveraging and exploitation of the organization's knowledge, both are necessary (but not sufficient) conditions to CRM success. However, they alone will have little direct effect on CRM performance. The organization must learn to

apply them in its practices to achieve desired outcomes. Yet, boosts to IT-intensity and absorptive capacity will eventually enhance CRM performance. IT-intensity and absorptive capacity allow an organization to develop its CRM practices, especially its market orientation. This in turn enhances CRM performance. Thus, market orientation should mediate the effects of IT intensity and absorptive capacity on CRM performance.

H4: Market orientation mediates the relationship of IT intensity and absorptive capacity on CRM performance.

Customer service will also mediate the effects of IT-intensity and absorptive capacity on CRM performance. As in the case of market orientation, customer service practices help ensure customer needs and expectations are more precisely met through the benefit of investments in IT and the development of the organization's absorptive capacity. Greater investments in both will provide the means to bolster customer service, which in turn allows the organization and customer to reap greater benefits. Thus, the effects of both (IT intensity and absorptive capacity) on organization and customer benefits will be mediated by customer service practices.

H5: Customer service mediates the relationship of IT intensity and absorptive capacity on CRM performance.

The importance of this model lies in understanding the effects of fundamental investments in IT and absorptive capacity on CRM success. Both enable the organization to gear itself to compete more effectively in electronic global markets.

RESEARCH METHODOLOGY

Data Collection and Sample

This study involved a survey of 542 Taiwanese financial service companies and was funded by the National Science Council (NSC) of Taiwan. The companies appeared on a list published by the Taiwan Joint Credit Information Center. Questionnaires were mailed with accompanying cover letters that explained the purpose of this research. Financial service companies were chosen because the highly competitive nature of their markets and their need to capitalize on customer-centric opportunities (i.e., highly customized services) make them prime adopters of CRM (Peppard, 2000). They are more motivated to differentiate and customize their products and services to better fit their customers' needs and expectations since many are engaged in Internet marketing (i.e., e-business) (Peterson et al., 1997). For example, to address e-business trends, many banks have looked into ways to build customer loyalty through customer segmentation, product differentiation and long-term relationships (Tomiuk and Pinsonneault, 2001). Because they represent a large segment of CRM users (Foss and Stone, 2002), their representatives tend to be more familiar with CRM features, applications and organizational objectives. The experiences of these companies would be representative of mature CRM users.

The recipients of the surveys were limited to CRM and marketing managers, and customer service department heads. Two weeks after the initial mailing, 99 responses were received. Follow-up telephone calls made a week later increased the total to 173 responses, for a response

rate of 32 percent. Among the returned surveys, nine were incomplete and therefore discarded; this reduced the sample size to 164 (30.3 percent return rate). Missing values among nine of the surveys further reduced the analysis to 155 observations. The final sample covers a broad cross-section of companies engaged in domestic and foreign banking, insurance and securities trading as well as many others.

Measures

The items in the survey instrument were adopted from various sources (Table 1) to measure the five constructs: market orientation (1-8), IT intensity (9-15), customer service (16-20), absorptive capacity (21-28) and CRM performance (29-40). A standard psychometric scale development procedure (Gerbing and Anderson, 1988) was followed to generate multiple-item scales based on a review of the literature and interviews with IT and marketing professionals. The questionnaire was pre-tested and refined following the comments of five IT and marketing managers. All items were operationalized with five-point Likert-type scales ranging from (1) strongly disagree to (5) strongly agree. Table 1 provides the operational definitions and their sources (i.e., references) for the five constructs, and Table 2 reflects the instrument's items. The high Cronbach alphas support each construct's internal reliability (Table 2).

A factor analysis with a varimax rotation (using SAS 8.2) was performed on five factors to correspond to the five hypothesized constructs. Because a customer service variable (products/services satisfy customer needs) loaded onto the market orientation construct, it was dropped and a second analysis was performed. Table 2 shows the rotated factors with all variables

Table 1: Operational Definitions

Variables	Operational definition	References
IT intensity	IT infrastructure IT applications	Sacha, 1993; Michael, 1996; Kalakota and Whinston, 1996
Absorptive capacity	Individuals cumulative learning activities Organization knowledge transfer Management climate	Cohen and Levinthal, 1990; Boynton et al., 1994; Bower and Hilgrad, 1981; Massey et al., 2001
Market orientation	Customer focus Competitor focus Cross functional integration	Narver and Slaters, 1990; Han et al. 1998; Slater and Narver, 2000
Customer service		
Customization	Customized services Customized capability	Silveira et al., 2001; Gilmore and Pine, 1997; Kotha, 1995; Pine 1993
Loyalty program	Marketing campaigns Customer profitability Strategic alliance	Sharp and Sharp, 1997; Barnes, 2001; Winer, 2001; Griffin, 1995; Hughes, 2001
CRM performance		
Organization benefits	Profit increase, Cost down, New opportunities	Storey and Easigwood, 1999; Swith, 2001; Winer, 2001
Customer benefits	Social benefits, Psychological benefits, Economic benefits, Customized benefits	Gwinner et al., 1998

properly loading onto their respective constructs. A Kaiser's measure of sampling adequacy (MSA) of .887 strongly indicates the appropriateness of the factor analysis, given the sample size (164 observations less 9 due to missing values). Composite scores were created for each factor from the summed values of its items to measure each construct.

Demographic data (number of employees, capital, and age of the organization) were also collected and compared to the population for potential non-response bias. T-tests of the sample and population means derived from the Joint Credit Information Center data suggest that none was statistically significant at a 0.05 level. Moreover, no significant differences between earlier and later responses for each item were detected. The absence of significant differences supports the contention that no response bias is present in the sample (Armstrong and Overton, 1977).

ANALYSIS

Hierarchical regression models were

developed to test each set of hypotheses. To study the effects of business capital and the number of employees on the dependent variables, both were included as control variables; this controls their effects to ensure that neither biases the results, and affords greater generalizability of the findings (Pedhazur and Pedhazur Schmelkin, 1991). Tables 3 through 5 provide summaries of the statistical results. Scatter diagrams of the residuals for each model revealed no violations of homoscedasticity.

The regression models support all but two of the research hypotheses. Model I (Table 3) suggests that IT intensity and organizational absorptive capacity are positively related to market orientation, one of the elements of CRM practices. The p-values of their standardized coefficients indicate both are significant to the model. The low values of the variance inflation factor (VIF) reveal no collinearity problems. These results support H1a and H2a. Similar results in Model II (Table 3) suggest that IT-intensity and absorptive capacity are positively related to customer service, and lends support to H1b and H2b. Thus,

Table 2: Factor Analysis

Kaiser's Measure of Sampling Adequacy: Overall MSA = 0.887

	Factor 1 CRM Performance	Factor 2 Absorptive Capacity	Factor 3 IT Intensity	Factor 4 Market Orientation	Factor 5 Customer Service
Cronbach Alpha	.948	.926	.915	.900	.782
Eigenvalue	13.742	4.837	2.904	2.33	1.596
Percent of Total Variance	.352	.124	.075	.057	.041
Cumulative Percent of Total Variance	.352	.476	.551	.608	.649
Factor Loadings:					
40. Value-added products and service	0.818				
37. Increased customer trust	0.813				
34. Enhanced image	0.806				
36. Reduced customer anxiety and uncertainty	0.801				
38. Reduced customer service time	0.796				
35. Customer service	0.795				
33. Increased service quality	0.780				
39. One-stop shopping features	0.752				
32. New markets	0.710				
29. Increased revenue	0.699				
31. Reduced new customer acquisition costs	0.696				
30. Marketing sales cost reduction	0.643				
25. CRM absorptive capacity		0.865			
23. CRM employee knowledge		0.850			
24. Employee business knowledge		0.835			
21. CRM training		0.756			
26. Cross-functional CRM involvement		0.730			
22. CRM training quality		0.728			
27. Help sources		0.715			
28. Relationships with IT staff/consultants		0.524			
12. IT hardware and software investments			0.808		
14. IT management			0.804		
13. IT system integration			0.781		
9. IT priority			0.744		
10. IT competitive advantage			0.716		
15. IT recruitment and training			0.698		
11. IT information features			0.642		
3. After sales service				0.759	
4. Predict customer needs				0.753	
2. Care and evaluate customer satisfaction				0.753	
6. Response to competitors				0.721	
5. Share information				0.686	
1. Customer satisfaction objective				0.671	
8. Cross-functional collaboration				0.607	
7. Understand competitors				0.571	
17. Add value to products/services					0.750
20. Promotions to customer segments					0.645
19. Products/services to customer segments					0.633
18. Incentive programs					0.586

Values greater than 0.4 shown.

it may be concluded that IT intensity and absorptive capacity are positively related to CRM practices. Increases to both will have similar effects on CRM practices.

Model III (Table 4) tested the effects of CRM practices on CRM performance. The results support the relationships, and

suggest that increases to market orientation and customer service have positive effects to CRM performance.

Two models (IV and V) were developed to test the mediating effects of CRM practices. Table 5 summarizes the results. A mediating effect will occur when varia-

Table 3: Regression Analysis Results for H_1 and H_2

		Dependent Variable					
		Model I			Model II		
		<i>Market Orientation</i>			<i>Customer Service</i>		
		Standardized Coefficient	T value	VIF	Standardized Coefficient	T value	VIF
Control Variables	Business Capital	-.089	-.82	2.881	-.779	-.66	2.881
	Number of Employees	-.104	-.95	2.873	.004	.04	2.942
Predictors	IT Intensity	.435***	5.70	1.426	.333***	4.00	1.426
	Absorptive Capacity	.271***	3.60	1.385	.267***	3.25	1.385
R ²		.387			.273		
F Value		23.67***			14.07***		
n		155			155		

*** $p < 0.01$, ** $p < 0.05$

tions in the independent variables account for variations in the mediator, variations in the mediator account for variations in the dependent variable, and when controlled the independent variables have no effect on the dependent variable. The significance of models I and II provides strong evidence to suggest a positive relationship exists between the independent variables, IT intensity and absorptive capacity, and the mediators, market orientation and customer service (i.e., variations in the independent variable account for variations in the mediator).

Model III suggests a positive relationship exists between the mediators (market orientation and customer service) and the dependent variable, CRM performance. However, the results of models IV and V (Table 5) reveal only a partial mediating effect. The significance of the mediators (market orientation in model IV and customer service in model V) and absorptive capacity, and the non-significance of IT intensity do not lend support to H4 and H5, respectively. This suggests that absorptive capacity has a direct positive relationship with CRM performance; increases to

absorptive capacity will have similar effects on CRM performance. It can be concluded that market orientation and customer service mediate the effects of IT intensity on CRM performance.

Generally, the data analysis partially supports the proposed research model. The partial mediating effects of CRM practices on the relationship between the independent variables and CRM performance suggest the existence of a direct effect of absorptive capacity on CRM performance. However, the low R-squares of the models indicate other factors not included in the model may account for a greater portion of the variations. Future studies need to explore more precise measurements to capture these variations without increasing the number of items on the survey instrument (increasing the length of the instrument will result in a lower response rate).

DISCUSSION

Advances in technology have facilitated significant changes to business practices. Cases, such as American Airlines

and Sabre (Copeland and McKenny, 1988), demonstrate the power of IT to secure unprecedented competitive advantages and change the competitive landscape of various industries. Today's IT and the Internet have enabled businesses to electronically broaden their reach to include global markets and increase their competitiveness in an unprecedented manner. Yet, the same IT that bestows a competitive advantage can also equalize the presence of all competitors in these markets. Thus, the challenge of today's global e-markets lies in an organization's ability to leverage and exploit its information to overcome IT's leveling factor and ensure a competitive advantage. The focus of marketing has shifted from mass marketing to long-term one-to-one learning relationships between an organization and its customers. The primary objective is to retain customers by understanding and meeting their needs and expectations. In global markets, this becomes a greater challenge as differences in cultures, societies and government regulations (as well as many others) increase uncertainty and complexity, yet (the differences) must be accommodated. E-busi-

ness no longer confines business to geographical or political boundaries, and adopting a global marketing strategy may be the key to long-term survival. CRM has become a means to manage engagements in global markets as it incorporates the principles of RM and IT to establish, develop and maintain one-to-one relationships. Technology alone will not guarantee success; other organizational investments must also be made.

This study examined the relationship among IT intensity, absorptive capacity, customer service, market orientation and CRM performance in the context of the financial service industry in Taiwan. Because financial service companies face global marketing challenges and global marketing focuses on developing product markets (i.e., selling a product or service to customer seeking shared benefits) rather than country or regional markets (Muhlbacher et al., 1999), the results might be viewed as precursory. However, future studies can expand upon the results of this study to determine whether the same effects apply to other industries and industries of other national origins. As Markus

Table 4: Regression Analysis Results for H_3

		Dependent Variable		
		Model III		
		<i>CRM Performance</i>		
		Standardized Coefficient	T value	VIF
Control Variables	Business Capital	-.034	-0.28	2.883
	Number of Employees	.144	1.20	2.872
Predictors	Market Orientation	.211**	2.53	1.374
	Customer Service	.336***	4.05	1.364
R ²		.244		
F Value		12.11***		
n		155		

*** $p < 0.01$, ** $p < 0.05$

Table 5: Regression Analysis Results for Testing Mediating Effects

		Dependent Variable					
		<i>CRM Performance</i>					
		Model IV			Model V		
		Standardized Coefficients	T value	VIF	Standardized Coefficient	T value	VIF
Control Variables	Business Capital	-.064	-0.52	2.896	-.063	-0.52	2.889
	Number of Employees	.149	1.19	2.954	.127	1.04	2.942
Predictors	IT Intensity	.048	0.51	1.729	.044	0.50	1.578
	Absorptive Capacity	.231**	2.61	1.487	.205***	2.37	1.495
	Market Orientation	.256**	2.67	1.592			
	Customer Service				.334***	4.02	1.375
R ²		.209			.253		
F Value		7.89***			10.07***		
n		155			155		

*** $p < 0.01$, ** $p < 0.05$

and Soh (2002) point out, structural conditions (i.e., financial, legal, regulatory and telecommunications infrastructures, national policies, business practices, language and education, etc.) influence global e-commerce activities in different countries.

The investments an organization places in its resources will contribute to the profits it will reap. Both IT and absorptive capacity represent vital resources that are necessary to compete in highly competitive electronic marketplaces with global reaches. IT enables organizations to achieve greater levels of success through efficiency gains and new opportunities. Larger investments directed toward critical IT (linked to the achievement of their organizational goals and objectives) and developing a comprehensive IT infrastructure allow its members to share knowledge and information both within the organization and between the organization and others, and become innovative. They also help empower them in making decisions that

are consistent with the organization's goals and objectives. Yet, these advantages tend to be offset by IT's equalizing effect. Consequently, more organizations have turned to CRM to (re)gain and maintain their competitive edge. However, for CRM to succeed, organizations must build and develop their organizational knowledge (R&D) and applications of that knowledge (i.e., practices) through absorptive capacity. When coupled with IT, the applications often lead to greater benefits.

The results of this study suggest that organizations will profit from their investments in IT and absorptive capacity through their ability to apply them. Simply investing in IT and R&D does not automatically lead to success; both are fundamental building blocks. Using IT and absorptive capacity to discover information of the environment and promote customer service activities increases the utility of CRM to capture certain benefits. The mediating effect of the organization's CRM practices

supports this contention. Investments in IT and absorptive capacity facilitate the development of CRM practices. To a lesser degree, absorptive capacity was found to have a direct effect on CRM performance. Advanced CRM practices keep the organization in tune with the environment (i.e., market intelligence) and its customers' needs (i.e., customer service). As the learning relationship flourishes, both the customers and organization benefit. The customer not only receives products and services that add value and fit his/her needs, but also gains psychological benefits (i.e., confidence, trust and reduced anxiety), the most important in maintaining the longevity of a relationship. The organization benefits particularly from increased revenues and service quality, and an enhanced image. Hence, the organization profits from its long-term relationships with its customers. Its return on its investments may be measured in terms of the benefits it will receive from caring for its long-term relationships.

CONCLUSION

This paper examined the relationship of IT intensity and absorptive capacity to CRM practices and CRM performance, and the mediating effects of CRM practices. Based on the data collected through a survey of financial service companies in Taiwan, the study generally concludes that organizations will benefit from their investments in IT and absorptive capacity through their CRM practices. Organizational absorptive capacity may also directly affect CRM performance. Greater investments in IT and absorptive capacity allow the organization to use CRM to extend greater benefits to its customers and receive greater benefits from their relationships. The conclusions may be particularly appli-

cable to e-business and global marketing as operating in the global marketplace comes with many challenges and opportunities that fall into the realm of CRM. With the current trend toward RM and the forecasted global opportunities, CRM can play a major role in helping build and maintain one-to-one relationships in B2B e-business.

ENDNOTE

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