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How the Application of Customer Relationship Systems in Commercial Bank Affect Service Innovation

-- Based on Employee Perspective

Yaoyao Peng[1, *]

[1]Business School, Soochow University, Suzhou, China

[*]Email:3025849220@qq.com

Abstract

With the rapid development of information technology, customer relationship management systems (CRMS) have been adopted by banks and played a vital role for customer development, maintenance, and retention. How to extendedly and creatively use CRMS is an essential issue at present. The role of customers' orientation in employees' CRMS usage is understudied. Thus, based on the information systems diffusion model, a research model is proposed and empirically tested. The results show that extended usage of CRMS (namely, CRMS use for exploitation and exploration) can positively affect employees' service performance. Besides, significant effects of customers' orientation are discussed in CRMS usage.

Keywords

Customer orientation; CRMS use for exploitation; CRMS use for exploration; Employees' service performance.

1. Introduction

Traditional commercial banks are more inclined to 20% high quality customers and give priority to provide service for them while ignoring the rest of 80%customers. With competition intensifying, it is not enough to only satisfy customer need. How to cultivate more quality customers and pursue potential customers is an important problem which needs to been dealt for commercial banks. most of commercial banks think about introduction of customer relationship management (CRM) to deal with this problem. Customer relationship management (CRM)is a technology for managing company's relationship and interactions with customers and potential customers. the goal is simple: improve business relationship to grow business. when people talk about CRM, they are usually referring to a CRMS, which is regarded as a special aspect of E-information systems and Bank gains more customer information through the application of customer relationship systems (CRMS) which collect more information about customers' need and provides suitable financial products to retain customers to repeat purchase resulting. A CRMS helps companies stay connected to customers, streamline processes, and improve profitability. However, despite substantial investment in CRMS, banks still continue to experience pain (such as low utilization and no integration with business processes) rather than profit (Renee et al.2019). employees play a crucial role to put themselves forward to achieve service innovation after the application of this E-information systems. This research conceptualizes, designs and develop research model to analyze medial operation mechanism in the context of service innovation and show how customer orientation goal affects the innovative application for CRMS to further promote employees' service based on perceptions and adaption of CRMS.

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This investigation for CRMS usage aims to improve theoretical understanding of the organizational antecedents to CRMS quality and also provides managers with insight into improving customer relationships. A firm and its customer interact, communicate(and along the way generate cues for new propositions), codesign, customize or even coproduce new experiences or solutions(Normann,2002).This paper aims to analysis how customer orientation affect CRMS for dual innovation--exploitation and exploration and explores if the application of CRMS can promote employees' innovative performance and service customers better through employees' understanding of CRMS because employees are the first to touch customers ,connect with them and provide suitable financial products for them. After all, the reason why commercial banks plan to apply CRMS with much money is that they expect that their employees could more effectively accommodate individual customers, engage in personalized dialogues with them, and personalize products or service offering by adopting CRMS. In summary, this study attempts to address the following important but still unanswered questions:(a) whether does customer orientation influence firms' different use of CRMS to promote service innovation? and (b)how does customer orientation influence firms' different use of CRMS to promote service innovation?

2. Literature Review

2.1. Customers' orientation

Management has recognized customer as the business core in the world business especially for commercial banks and the success of an organizations depends on effectively managing their relationship with customers. A firm is able to actually implement new propositions that depends on its ability to transform users' needs into propositions, which in turn depends on its ability to acquire or conceive ideas. CRM is designed by the basic idea that customers' future behavior is determined by their previous or similar behavior. The basic application of customer relationship management system (CRMS) is aimed to collect, update, manage customers' information, and learn about current customers' needs and purchase pattern. Then exploratory innovation application in CRMS is to better predict future behavior of the customer and help organization to better respond to their customers' changing demands and preference. Prior research on the effects of customer relationship systems tends to involve two types of outcomes--customer oriented and firm oriented. customer-oriented research typically focuses on end results, such as sales levels or customer satisfaction, whereas firm-oriented research revolves around the effects of sales efficiency.

This paper uses the service-dominant logic perspective when developing integrative framework of service innovation antecedents. Under the service-dominant logic framework, customer are co-creators of value who integrate their own resources and competence with those provided by others. And they argue that involving customer in varieties of activities of service innovation that stimulate interaction and creativity may improve the innovativeness of the service offering (Melton & Harlin, 2015). Customer orientation is given great attention to the concept from marketing. Kohli and Jaworski (1990) point out that discussion of customer orientation (or the term "market orientation") has been within the context of implementing the marketing concept. They further distinguish three behavioral components of a market orientation as being customer orientation, competitor orientation, and interfunctional coordination (defined as the coordinated utilization of company resources in creating superior value for target customers) and argue that all are equally important. Of course, there exist some literatures regarding customer and market orientation as being synonymous. This paper defines customer orientation as the set of organizational beliefs and values that puts the customer's interest first, which is regarded as a much more fundamental part of an overall. Organizational culture has been defined variously as the values and beliefs shared by the

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numbers of organizations and is “a pattern of beliefs and expectations shared by organization members”. Customer orientation as one of types of organizational culture, to understand the impact and functioning of customer orientation, we should relate it to informational technological innovativeness, with the analysis embedded within a framework of organizational culture. A customer orientation may be seen as providing a strong customer focus within the firm and require a complete understanding of the customer’s role in the firm’s value chain, and involve the organization-wide generation and dissemination of customer information, as well as the firm’s ability to respond effectively to such information(Kohli and Jaworski,1990).A firm that is customer-oriented usually is regarded as a firm that has the ability to identify, analyze, understand, and satisfy customer needs and also has organizational members that are committed to the coordinated utilization of customer information to facilitate more profitable long-term customer relationships. The findings suggest that a customer-orientation entails (1)one or more departments engaging in activities gear toward developing an understanding of customers’ current and future needs and the factors affecting them, (2)information about their customers across departments, and (3)various departments engaging in activities designed to meet select customer needs(Kohli and Jaworski, 1990).

2.2. CRMS usage behaviors

Although most domestic banks have introduced CRM system to store customer information, the ways of applying CRM systems technology are different, which directly affects the results. Therefore, it is important for firms to explore technical innovation especially for information technology innovation. A technical innovation can be the implementation of an idea for a new product or a new service or the introduction of new elements in an organization’s production process or service operation. Technical innovations are perceived here as a means of changing and improving the performance of the technical system of an organization. According to the dual theory of organization, enterprise innovation activities can be divided into exploitation and exploration innovation. Exploratory innovation refers to the radical innovation activities implemented by an enterprise after it breaks away from the original new business areas. It requires the organization to continuously obtain external heterogeneous resources. There are great risks and uncertainties, but it helps to improve the long-term performance of the enterprises, but it helps to improve the long-term performance of the enterprise. Exploitative innovation refers to the innovation activities of the organization to continuously improve products and business on the basis of existing knowledge and technology. Through the gradual improvement of existing technology, it can improve the use efficiency of internal resources, effectively reduce the risk of new product research and development and improve organizational performance（Chen et al.2021）.This theory has also introduced into IS studies or information technology studies. Exploitation and exploration in organizational learning are widely employed, which even spread over other research directions. Subramani (2004) proposed “exploitative usage” (dealing with structured process) and “explorative usage” (dealing with unstructured process) and classified the benefits of IT usage as operational benefits and strategic benefits. It concludes that the exploitative use of CRM results in operational benefits, whereas the explorative use of CRM provides strategic benefits. both of benefits of CRM will eventually improve firm performance. Sanders (2008) determined that the exploitative use of IT mainly generates operational benefits, whereas the explorative use of IT primarily generates strategic benefits. This paper wants to try to connect two streams and explores CRMS for exploitation and exploration will have affect employees’ performance with consideration of customers’ management.

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3. Research Framework and Hypothesis

3.1. Theoretical basis

IS diffusion model is widely used in post-adoption behaviors of information system and studies the characteristics and contents of information technology in different stages. Post-adoption behavior is defined as "adoption decision, function usage behavior and extended behavior made by individual users after installing its applications" (Jasperson et al., 2005), which emphasizes the importance of how individuals use technology and interact with technology. Drawn from Cooper and Zmud (1990), the work of Saga and Zmud (1994) suggests four different stages of the information technology diffusion process: adaptation, acceptance, routinization and infusion. Post-adoption corresponds to the last two stages of this process (i.e., routinization and infusion).

Grounded in the ambidexterity literature, exploitative use and explorative use can simultaneously exist in the IS infusion stage. At the individual level, Burton-Jones and Straub (2006) conceptualized exploitative system usage as usage related to short-run task performance, while explorative system usage is linked to long-run task performance. In the context of IS usage, exploitation refers to using the system to perform structured repetitive tasks to improve efficiency, while exploration refers to the innovative use of systems to perform unstructured or existing tasks (Subramani, 2004). That is, exploitative usage is defined as using more available system features to complete tasks, which means using information system functions in an automatic, substantive, technical or productive way, while explorative usage is defined as using systems to support tasks in an innovative way (Koo et al. 2015). In order to maintain competitive advantage and provide better services, employees need to conduct the both behaviors. Exploitative usage emphasizes the utilization and in-depth development of existing knowledge, highlighting "doing better", which is performed in the form of improvement; explorative usage emphasizes the pursuit of knowledge, highlighting "doing differently", which is performed in the form of breakthrough (Feng, 2021).

3.2. Research framework

Building on previous IS, sales force, and psychology literature, I design a conceptual framework that relates customer relationship systems use to the innovation performances of employees. Paper distinguishes two types of functions that integrate CRMS use for exploitation with CRMS use for exploration. CRMS use for exploitation is regarded as improving, applying, and incremental refining individual abilities for serving customers and employed to satisfy customers' basic demands, which is often short-term while CRMS use for exploration benefits for creating new capabilities, devising novel solution to current problems and employed to satisfy customers' need which is long-term oriented. With the application of CRMS, commercial banks can easily obtain data from customer, learn clearly about their differentiated needs and offer pleased service for their customers. It also simplifies job content of employee and benefit for service innovation. I n this paper, I am going to discuss the effect the application of CRMS makes on service innovation of employees based on employee's customer orientation (Renee et al.,2019)

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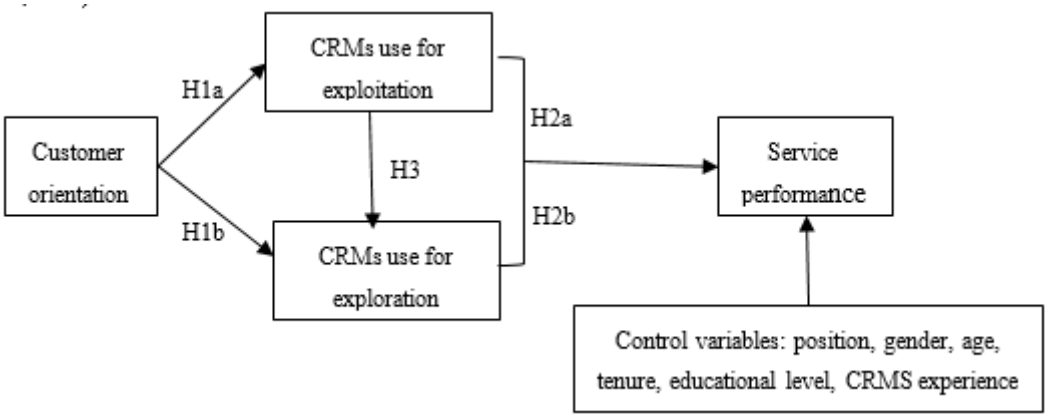

Figure 1. Structural model

Table 1. Definition of principal latent variables

Principal constructs	Definitions	references
Customer orientation	It concludes submodules for customer information searching, customer distribution analysis, lead generation, and potential lost customer management.	Saparito et al 2004
CRMS use for exploitation	It aims to improve, apply, and incrementally refine individual abilities f service customers. It mainly satisfies customers' basic demand(short-term)	Verma et al 2013
CRMS use for exploration	It aims to create new capabilities, devise novel solution to current problems. It is employed to satisfy customers' deep demand	Verma et al 2013
Service performance	The overall evaluation of a employee's service activities including self-assessed performance and manager-assessed performance	Ray, Muhanna, and Barney, 2005

3.3. Research hypothesis

3.3.1. Customer orientation's effect on CRMS use for exploitation and exploration

This paper examines if the innovation journey begins in chaotic behavior and ends in orderly periodic behavior and indicates action and outcome events exhibit a chaotic pattern during the initial period of innovation development, and a more orderly periodic pattern during the ending development period. Firms should fully understand users and sense their needs or potential needs well in advance by interacting intensively with (potential) clients, which include dialogues with lead users, joint experimentation and prototyping, user panels, account management systems, client profiling, detailed analysis of how current products are or trend analysis in client groups.so CRMS use for exploitation and exploration can contribute to further sensing user needs and inform actual act of innovation. The relationship between service innovation, social innovation and system innovations is an important topic to advanced economies especially been embedded in the role of service innovation in social innovation (most social innovation are leading to new or improved services).And user-driven service innovation can be considered a part of social innovation since it makes social agents as coactors of innovation and because it is often linked to social goals(Marja,2016).So far there exist two sets of factors been identified as achieving adoption of new technologies and services in user industries. the first set can loosely be characterized as "technology push" factors associated with the technology, i.e., price-performance characteristics, the uncertainty about performance and usability; the second set can be characterized as "demand-pull" factors stemming form the

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nature of the user industries and their applications of the technology, i.e., the market structure of each industry, the opportunities to apply the technology, and the adaptability of the user organizations. customer orientation has a positive promoting effect on exploratory technological innovation and exploitative technological innovation in enterprises.

H1a: focusing on customer orientation can promote CRMS use for exploitation.

H1b: focusing on customer orientation can promote CRMS use for exploration.

3.3.2. CRMS use for exploitation and exploration innovation and service innovation performance

Traditional innovation model has depicted value as flowing linearly and sequentially from innovation-creating firms to innovation-adopting customer. However, while this movement toward more dynamic approaches of innovation raises issues with innovation models that are centered on unidirectional process, it often remains focused on the firm-centric development of new products and services(Marja,2016).Physical artifacts in technological innovation are important since these artifacts are often the vehicles that convey embedded knowledge and skills as well as mechanisms of institutionalization(Marja,2016).there is a interaction effect between exploitative and explorative innovation strategies on firm performance(He and Wong,2004).exploitative and exploitative innovation both have positive effects on enterprise performance based on two parts: market orientation and entrepreneurial orientation.

H2a: CRMS use for exploitation can benefit organizational service innovation performance.

H2b: CRMS use for exploration can benefit organizational service innovation performance.

H3: CRMS use for exploitation can benefit CRMS use for exploration.

4. Reasearch Method

4.1. Research data

The empirical research is conducted at some commercial banks and gives away questionnaire to leaders and employees of banks. The simple data in this research is collected by questionnaire survey method. steps of questionnaire design are as followed: firstly, it adapts maturity scales in authoritative journals at home and abroad to measure key variables of the research; secondly, author translates English questionnaire into Chinese questionnaire according to Chinese context and situation in case of deviation; thirdly, we invite some leaders and employees in commercial banks to advance forecast and further improve the questionnaire items. this paper takes commercial banks as the research object. commercial banks often early introduce CRMS to manage customers' information and consider how to improve employees' service innovation performance based on CRMS explorative usage.

4.2. Variable measurement

To maintain reliability and validity in questionnaire, variable measurement in this paper refer more mature measuring scale at home and abroad. concrete measurement on each variable is as followed.

Customer orientation: In view of Saparito et al measurement method, combined with the research purpose of this paper, this part separately adopts five subject items to measure customer orientation.

CRMS use for exploitation and exploration: Considering measurement on routine and innovative use of CRM system in Li et al., It separately uses three subject items to conduct measurement with combining CRMS application in commercial banks.

Service innovation performance: This paper selects employee's service performance (Menguc et al), employee innovative performance (Schepers et al.), performance with customer (Chen et

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al.), financial performance (Chen et al) as measurement variables to test the effect CRMS use has on service innovation performance.

Paper considers position, gender, age, education level, tenure in the bank as control variables. position mainly includes two types: outlets branch president marked"1" and outlets branch vice president marked"2". Gender is divided into "1" standing for male and "2" standing for female. Age is divided into five stages:<=19;20 – 29; 30 – 39; 40 – 49; >=50, taking 1-5scores from small to large. Education level differentiates five types: primary school; secondary school; college for vocational training; college； postgraduate and above. tenure in the bank includes "< 1 year"; "1-3 years"; "4 – 6 years", "7-8 years"; "9 – 10 years"; ">= 11 years", taking 1-6 scores from small to large.

5. Empirical Analysis

5.1. Descriptive statistics

Table 2. Sample demographics (n=150)

Item	Category	Percentage	Item	Category	Percentage
Gender	Male	39.3%	Position	Customer Manager	54.6%
				Credit Section Chief	22.6%
	Female	60.7%		Deputy President	8.7%
				President	7.3%
				Others	5%
Age	<=19	0%	Education Level	Record of Primary School	0.6%
	20 – 29	48.7%		Record of Middle School	12.7%
	30 – 39	44%		Junior Bachelor	84%
	40 – 49	7.3%		Bachelor	2.7%
	>=50	0%		Postgraduate or above	0%
Tenure in the bank	< 1 year	0.8%	CRMS Experience	< 1 year	45.3%
	1-3 years	17.3%		1-3 years	29.4%
	4 – 6 years	37.3%		4 – 6 years	13.3%
	7-8 years	23.3%		7-8 years	8.7%
	9 – 10 years	1.3%		9 – 10 years	2.6%
	>= 11 years	20%		>= 11 years	0.7%

5.2. Reliability and validity test

In terms of reliability measurement, this paper adapts Cronbach'sa to measure the reliability of each variable, the result can be shown in the table1.If Cronbach'sa numerical value is over 0.75, it shows that the internal fitting degree of each variable scale is good. however, when its numerical value is below 0.75, it shows the internal fitting degree is not so good. According to the table, we can find Cronbach'sa numerical values are both above 0.75, so the internal fitting degree of this questionnaire is so good.

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Table 3. Construct reliability, convergent validity, and discriminant validity

Construct No.and Name	coding	Weight	Factor loading	VIF	Cronbach's Alpha	Composite reliability	AVE
Customer Orientation	ECO1	0.261	0.818	2.004	0.874	0.913	0.725
	ECO2	0.272	0.863	2.479			
	ECO3	0.322	0.873	2.394			
	ECO4	0.319	0.851	2.043			
CRMs use for exploitation	ERTU1	0.298	0.864	2.048	0.912	0.945	0.852
	ERTU2	0.391	0.947	1.903			
	ERTU3	0.388	0.955	2.344			
CRMs use for exploration	EINU1	0.373	0.936	3.709	0.931	0.956	0.879
	EINU2	0.361	0.936	3.610			
	EINU3	0.333	0.942	4.276			
Employees' service performance	ESPF1	0.192	0.843	2.534	0.896	0.921	0.660
	ESPF2	0.214	0.745	1.853			
	ESPF3	0.207	0.818	2.269			
	ESPF4	0.203	0.856	2.778			
	ESPF5	0.193	0.880	2.804			
	ESPF6	0.161	0.722	3.534			

Abbreviations: AVE, average variance extracted

In terms of validity, this study is adapted from a relatively mature scale after proper adjustment, so it can be accepted as better content validity test results show that coefficients of load about measure items are all over 0.6 and AVE values are over 0.5, which stand for better validity of this scale to further analysis.

Table 4. Descriptive, AVE and construct correlation matrix

Latent variables(a)	Mean	S.D.	AVE	1	2	3	4	5
1.Customer orientation (4)	5.642	1.285	0.725	0.852				
2.CRMs use for exploitation (3)	5.60	1.374	0.852	0.518	0.923			
3.CRMs use for exploration (3)	4.573	1.538	0.879	0.441	0.458	0.938		
4.Service performance (6)	5.054	1.212	0.660	0.483	0.375	0.604	0.813	

a Number of measurement items

Abbreviations: AVE, average variance extracted (values on the diagonal are the square roots of the AVE)

5.3. Structural model

Figure2 indicates the correlation coefficient among the variables and the results show there is a significant correlation among the variables.

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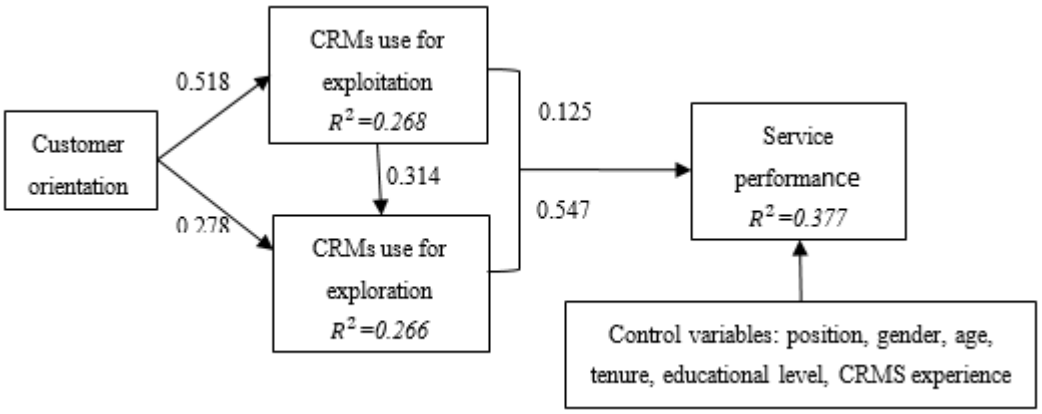

Figure 2. SPLS results of the structural model

Table 5. Path coefficients

Hypothesis	Relationship	Std beta	T	p	LL	UL	Decision	R^2	f^2
H1a	ECO→ ERTU	0.518	8.903	0	0.395	0.624	Supported	0.268	0.344
H1b	ECO→ EINU	0.278	3.451	0	0.111	0.429	Supported	0.266	0.243
H2a	ERTU→ ESPF	0.125	1.240	0.215	-0.068	0.310	Unexpected	0.377	0.047
H2b	EINU→ ESPF	0.547	7.495	0	0.405	0.690	Supported		0.081
H3	ERTU→ EINU	0.314	4.014	0	0.152	0.460	Supported		0.098

Regression results show that customer orientation (β=0.518, p<0.01) has a significant influence on CRM system use for exploitation and customer orientation (β=0.278, p<0.01) also has a positive effect on CRM system us for exploration. So that H1a, H1b can be tested. then results also indicate that CRM system us for exploration (β=0.547, p<0.01) will have respectively positive influence on service innovation performance. Based on the results, H2b can be tested. While the result (β=0.125, p>0.01) of CRM system us for exploitation is not significant. This paper discusses the effect customer orientation has on service innovation and regulating effect of CRM system use for exploitation and exploration. Results actually show that customer orientation will have a good influence on service innovation based on the different use of CRMS.

6. Conclusion and Discussion

6.1. Key findings

In this study, I investigate employees' CRMS extended usage behaviors (i.e., CRMS use for exploitation and CRMS use for exploration) and analyze the antecedent of applying CRMS (i.e., customer orientation). The results indicate that customer orientation can positively affect employees' systems usages. Further, I discuss employee CRMS usage behaviors in IS infusion stage and explores the different effects of exploitative usage and explorative usage of CRMS on employees' service performance. The results show that CRMS usage behaviors results in different service performance. As expected, CRMS explorative usage benefit service performance. However, interestingly, exploitative usage is harmful for service performance. This may because in a highly competitive market, routine usage of information systems may not help companies and even has negative impacts. Emphasize more on conventional usage,

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which is mostly happens in banks, may cultivate conformist and finally damage the organizations.

6.2. Theoretical contribution

One of the main research questions that has intrigued both researchers and practitioners alike in recent years is the effect that CRMS technology has on employees' and firms' service innovation.IS research has made significant progress in understanding psychosocial determinants of IT use and employee service innovation performance from such use.my research sought to extend IS usage theory and dual innovation theory by focusing on the effects of customer orientation on employees' service innovation performance and CRMS use as key mediators of the relationship between customer orientation thought and employees' service innovation. consistent with my prediction and those offered by IS researchers, technology use did yield positive and significant outcomes. specifically, in my empirical test I discover that increased technology is associated with employees' service innovation via CRMS use for exploitation and exploration.my exploratory analyses suggest that there may be some from of relationship between CRMS use and service innovation performance. CRMS use is found to significantly affect employees' service innovation. this positive relationship confirms the assumption that CRMS use can help employees update their knowledge about the market and about their specific products so as to develop innovative service and products.

6.3. Practical contribution

This study has several implications and findings that can be translated into strategic actions for employees and leaders. findings suggest that overall usage of CRM system tools can have a significant influence on employees' service innovation performance to better serve customers' needs. this is important because it helps managers persuade their employees to use CRM system more during the management process. moreover, it is evident that the use of technology can lead to several positive outcomes for employees. for example, sales departments' priorities have moved to improving relationships and improving the quality and uniqueness of the sales presentation, technology may be a viable option in this regard. the use of the right IT system can help salespeople build stronger customer relationships. this being the case, firms must decide how to deploy their technology resources to maximize their customer relationships, and must also determine how to get their salespeople to use those resources. the relationship between customer orientation, CRM system use, and service innovation provide a strong justification for the implementation of IT. this study helps managers and employees recognize some of the intangible benefits associated with CRM systems, which has heretofore been elusive. It may also be interesting to note that once employees begin to see the positive outcomes associated with their use of the technology systems, they may be more willing to invest more time and effort into using the system (Ahearne et al.2008).

Past literature indicates other important issues that require future research. researchers need to investigate additional mediators of technology use that we may have omitted as well as potential moderators that may enhance or detract from relationships. for example, the length of the relationship with the customer may strengthen or weaken some of the proposed relationships. also, better understanding of the timing and longitudinal nature of these outcomes is needed, as well as research that partitions the technology usage measure into finer components.

6.4. Limitations and future research

This study has some limitations that provide opportunities for future research.

Firstly, in the current study, we only focus on the CRMS usage. Further study could combine different types of factors besides the CRMS usage.

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Secondly, CRMS has been adopted in various organizations. In the current study, we select a typical service industry (i.e., bank) to test our framework. The generalizability of the research findings could be limited to the contexts. Further researches may examine whether the result is consistent in different contexts.

Thirdly, since the data was collected by questionnaire, although we tried our best to control for common method variance in the research design and the methodology, it cannot be fully eliminated. Further study could replicate the research with different data source and/or methods.

7. Conclusion

CRMS have been commonly adopted in various contexts for years and already stepped into post-adoption stage. This research aims at exploring how different usage behaviors of CRMS affect employees' service performance and how to manage it. By providing a theoretical model and empirical evidence for extended usage of CRMS, our finding highlights the antecedents and mechanisms of CRMS explorative and exploitative usage on service performance.

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