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Abstract

There are two main sources of knowledge about customers: customer profile and customer participation. The companies use information technologies to analyze the customer profiles and extract tacit knowledge about customer via customer participation. The result of this experiment demonstrates that the use of customer profile improves customers' perception on goods quality and increase the effectiveness of Customer Relationship Management (CRM). In addition, customer participation can improve customers' perception on goods quality and enhance performance of CRM through perceived participation. The result indicates that the customer profiles and customer participation are two crucial factors for companies to maintain customer relationship.

1. Introduction

Companies are now focusing on high customer retention and maintaining long term customer relationship [2][28]. Customer relationship management (CRM) is a high customer retention strategy. It is very important to know more about customers' needs and offer customize products and services in order to improve customer satisfaction and loyalty [6]. To collect customers' profiles and to get customer participate are two main strategies to know more about customers' needs. CRM research highlighted the knowledge about customer are critical but the tacit knowledge of customer are not much emphasized which the company need to make CRM efforts effectively [19]. Therefore, corporations should seek new interaction mechanisms to achieve complete communications and building partnership with customers and get more non-structured information of customers that is leveraged to drive CRM activities. In the context of urgent demand of tacit information about customers, customer participation in the service research should be considered as one important source of knowledge about customers besides customer profiles acquired by database technologies. Also, user participation is able to directly increase users' perception about the services provided by the companies.

The main objectives of this paper are to (1) discuss and integrate the CRM, customer knowledge management, customer participation relative researches to infer the conceptual model include customer profile and customer participation and measures of CRM performance; (2) to investigate the relationship between the degree of using customer profile and customer's perception on goods quality; and (3) to investigate the relationship between the degree of customer participation and customer's perception on goods quality and CRM performance.

To draw the impact of customer profile and customer participation on the CRM performances, this study examines the theories of CRM, customer participation and customer knowledge management.

2. Customer relationship management

The new marketing paradigm is base on knowledge and experience [21]. The knowledge-based marketing paradigm indicates corporations need to know more about customer and the experience-based marketing paradigm suggests that bring more interactions into customer related activities. From the 90s, there are lots of similar terms: customer management, customer information systems, customer value management, customer care and sometimes customer centricity or customer-centric management, but now clearly, the term Customer Relationship Management has overtaken the market [4].

CRM is an interactive process that turns customer information into customer relationships through active use of and learning from the information. It is a cycle for encompassing major group of actions: knowledge discovery, market planning, customer interaction, and analysis refinement [28].

Ryals and Knox [25] address the philosophical bases of CRM are: a relationship orientation, customer retention and superior customer value created through process management and successful implementation of CRM requires cross-functional reorganization, especially marketing and IT, to work closely together to maximize the return on customer information. The impact of use of IT on marketing reflecting the database marketing grew in significance in the late 1980s [21]. In summary, CRM integrated practices of database marketing to support short-term market tactics and conceptual frame to relationship marketing to develop long-term customer relationship strategy.

3. Customer knowledge management

There are some characteristics about the companies perform well on customer relationship management: excellent product, excellent management, and the use of knowledge about customer [7]. Customer knowledge management is going to be a research stream in Taiwan recently [14]. There is similar concept: knowledge-enabled customer relationship management (KCRM) addressed by Tiwana in 2001. KCRM is a business model/strategy to manage customer knowledge to generate value-creating lock-ins and channel knowledge to strengthen relationships and collaborative effectiveness. It's more than a technology-focused solution [30].

Customer knowledge management is integrating with IT and business processes turns the customer information to knowledge which used to support marketing, sale and service decisions and build up good and strong relationships with customer base on knowing customer's need and create value to customer [14]. Knowing customer more, the corporation can precisely invest on valuable customers and reduce the cost on valueless customers [31]. In summary, CKM is the management technique turns the information from customer to the strategic-support knowledge to reinforce the value of goods which company offer for customer.

4. Customer participation

Insufficient knowledge base of customer limits the value which company can offer to the customers [7][39]. The basic component of customer knowledge comes from customer profile that obtained by use of database technologies in organizations. The customer profile is a more structured part of customer knowledge and a more non-structured part could come from customer participation.

In the service research area, customers contribute information or efforts in the service encounter process with the service provider fulfill the process together while the service produced and consumed at the same time [5][13][23][29]. For example, the patients describe their own symptom to doctors. It makes the process of diagnosis more smoothly. These services performance is heavily influence by the information and efforts of customers [13][17].

There are different dimensions of participation including personal interaction, information sharing, and responsible behavior. It suggests that participation has a positive impact on customer's perceived product/service quality and customer satisfaction and a mixed impact on retention. Different aspects of participation do not contribute equally in these models; specifically personal interaction was found to have more significant effects while the information sharing were thought to be of particular significance from a conceptual perspective [13]. There is a similar result in the new product development research area. It indicates that through close contact with customers, designers can accurately identify market requirements, quickly refine product specification and reduce time to market to remain competition [10].

Not much CRM research did specific effort on getting and using the non-structure information about customers [19]. And customer participation could fulfill the shortage of applications gaining tacit customer knowledge. Customer participation in the delivery of service process highly related the perceive quality of service, customer satisfaction and new product's performance [13][17]. Customer would contribute his own information in the process of participation and also get information about the corporation. This is a two-way communication between buyer and seller which would create impacts on the CRM's performance.

There are some similar discussions on participation in numbers of different research areas. In the service research, customer participation refers to the contribution of customer information and effort spent in the process of service encounter [5][13][23][29]. Customer participation influence the quality of service [13][17]. In the information system development research, user participation would influence user perceived system success and user satisfaction [34]. In the advertisement research, scholars concern about the impacts of customer involvement of advertisement and products on the

purchase decisions [37].

5. The research framework and hypothesis

Figure 1 presented this study's conceptual model derived from preceding discussion.

There are two main kinds of knowledge sources in the CKM construct, Customer profile and Customer Participation, the former represent use of IT to acquire and create information about customer in the organization and the another shows there are two-way communication and interaction between corporation and customers. In the CRM performance construct includes three measurements: Customer Satisfaction, Customer Loyalty, Customer Retention, this conclusion drew from the literature [8][16][33].
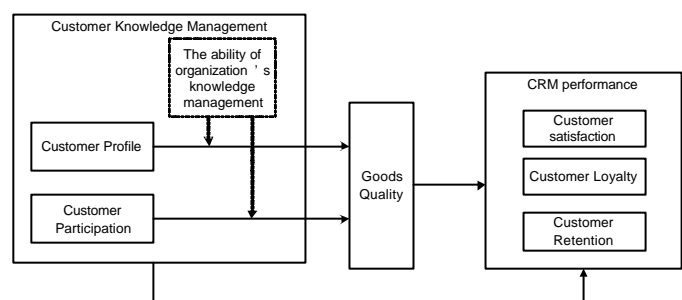

Figure 1. Conceptual model

5.1 The effect of customer profile on perceived goods quality

Goods mean the service or product which company offers to customers. Although there are many measurements to examine the quality of products, customers usually determine the quality of product base on their own subjective points of view [35]. From this viewpoint, the main factor of product's quality would base on the degree of conformation to customer demand. And it's harder to measure the quality of service when the goods is intangible [23]. The output of service is the process itself. The judgment of service quality would base on customer experiences and perceptions on the process [35]. The above discussion shows that it is crucial to measure customers' perception on goods quality.

Customer profile is a base form of customer knowledge. By obtaining and analyzing customer profiles, corporation can develop products and services to fit the customer's needs. Showing customers that the company is using their profiles to provide customized goods will also lead users to raise their perception on good. To examine this proposition, we proposes the first null hypothesis of this research:

H1: Company obtained and used of customer profile could not influence its good's quality offer to customer.

5.2 The effect of customer participation on perceived goods quality and CRM performance

Besides getting customer profile to find out customer's needs, corporations also need to seek solution to gain more tacit information from customer to know customer better [19]. This situation indicates corporation should build some channels and launch activities to enable the transform of tacit information with customer. Base on preceding discussion on customer participation, it is possible for corporation to interact and get insights of customer needs through customer participation. Getting customers to participate in value delivery processes helps customers to know corporation ability better and raises the customers' perception on goods. The customer participation has also positive effects on customer satisfaction, customer loyalty and customer retention [10][13][17]. To examine this proposition, here proposes the second and third null hypothesis of this research:

H2: Customer participation could not influence the goods' quality that companies offer to customer.

H3: Customer participation could not influence the performance of CRM.

H3a: Customer participation could not influence the customer satisfaction.

H3b: Customer participation could not influence the customer loyalty.

H3c: Customer participation could not influence the customer retention.

5.3 The effect of ability of organization's knowledge management

The building design research pointed out that there are several reasons that buildings do not meet the needs of their users, such as clients' need are not studied and documented and hard to trace and management these requirement and it also proposed a project focuses on the development of methods and tools to capture customers needs and interpret them into requirement and to manage the conformity of technical solutions [15]. It shows that organization don't know where their best knowledge is and how to use it well. The front end of company capture customer input continually while the limited ability of company's knowledge management might cause difficulties transferring the customer's requirements into new product characteristics and also to build meaningful and strong customer relationship with customer [7]. In order to discover main effects of customer profile and customer participation on the goods quality and performance of CRM, this research control the ability of organization's knowledge management as a constant construct which represents the organization use 100% of customer knowledge well and not examine this construct's effect in this framework.

5.4 The effect of goods quality on CRM performance

Service quality the company provide to customer positive affect the customer relationship quality, customer satisfaction and loyalty [20][32]. The quality of goods would influence the customer's buying decision-making. When quality of goods is higher than customer's expectation, customers are motivated to buy the goods. The goods quality depends on customers' subjective perceptions on how these high quality goods will bring them benefits [35]. High perception of goods quality leads to high customer satisfaction, loyalty and retention. To examine this proposition, here proposes the third null hypothesis of this research:

H4: The quality of goods could not influence performance of CRM.

H4a: The quality of goods could not influence customer satisfaction.

H4b: The quality of goods could not influence customer loyalty.

H4c: The quality of goods could not influence customer retention.

6. Research Design

To test the relationships of customer profile and customer participation on perceived goods quality and performance of CRM, this research employ an experiment with scenarios of services encountered and the recall-base questionnaire. The primary advantage of using scenarios is that they eliminate difficulties of observation on the use of customer profile and the practice of customer participation in organization's everyday working. And also the use of scenarios reduces biases from memory lapses, rationalization tendencies, and consistency factors, which are common in results based on retrospective self-reports [26].

Recently, the on-line bank has prompted their on-line services and this would be a focal development in the future of the banking industry. This is the reason that this research used on-line bank service as scenarios and focus on five on-line services: credit card's bonus and gift exchange service, high amount transaction confirmation, payment reminder service, comments, and new service development conference, to narrow down the complexity and more precise reappearance of variable manipulation.

The subjects for this experiment were composed of students from four departments of EMBA in the Fu-Jen University. There were 119 EMBA students involved in the experiment and data collected using individually completed questionnaires after the last step of experiment. Of the 119 subjects, 96 subjects' questionnaires were valid. Among these 96 subjects, 68 were male, 28 were female.

7. Experimental Design

The experiment employed a 2X2 between-subjects design, in which customer profile and customer participation were manipulated. Each treatment is a scenario that was combination of one of two customer profile scenarios (high or low) with one of two customer participation scenarios (high or low).

This study deemed these three conditions would affect the perception of subject on the process. After separating subjects based on these conditions, assign subjects based on questionnaire filling time would reach random sampling. Subjects were asked to fill out the questionnaire and set their own account and password which be used to login the experiment system as realized scenarios of on-line bank. Subjects then read the explanation of specific terms and notice. The program drew data from the personal-data questionnaire to assign subject into one treatment of experiment. Subjects used their own account and password to login the on-line bank of the experiment. The first page subjects read was subject's account data which was default value represented the scenarios of on-line bank. Subjects were asked to transfer money for credit card payment used the on-bank interface which was a practice for subjects to familiar the operation of experiment on-line bank system and also a cue that the subject was one of on-bank customer. Subjects will then proceed to credit card bonus and gift exchange service. This step was the beginning of experiment's manipulation. The different semantics and operation on the page of on-line bank represented each manipulation of the experiment. Subjects then updated the setting of payment inform service, high amount transaction confirmation service. The different semantics and operation on the page of on-line bank represented each manipulation of the experiment. Only subjects in high participation treatment then asked to provide their comments. The last step is to ask subjects to participate in a new service development conference.

After the manipulations, subjects fill out the questionnaires based on the experience of previously operations of the on-line bank system.

8. Manipulation of factors and Measurement of Variables

Customer profile and customer participation are two independent variables of this study respectively. Each of them were manipulated as high and low degree based on the previous researches discussed above and represented as on-line banking system. The detail of manipulation and definition of independent variables are discussed below.

8.1 Customer Profile

Customer profile variable indicated that organization has had acquired the customer's information by different kinds of channels or systems to transform this information into practical instruments to provide customized goods. This study manipulated low and high degree of customer profile by the different semantic descriptions on the webpage such as "these gift are prepared for you based on your past transactions via our on-line banking service" as the cue and let subjects believed this on-line banking system provided customized service base on their own profiles and this would be the highly customer profile degree.

8.2 Customer participation

Customer participation means customer has to contribute some effort or information in the process of products or service fulfillment for customer. And this variable indicated that organization had built mechanisms and also invites customers to participate actively. This study manipulated this variable by supply different flexibilities of services for customers in the low and high customer participation treatments. In the high customer participation treatment, the subjects have more than one options base on their own demand and there was only one choice for subjects in the low participation treatment. For example, subjects in high participation can decide mean

and time to get informed on the due date of payment and the subjects can not decide in the low participation treatment.

8.3 Questionnaire

After going through all of the experiment steps, subjects were asked to fill out the questionnaires. The questionnaire is divided to two sections: first section contains four questions to check whether the subject perceived the proper scenarios in the right manipulation treatment. And the second section contains 20 questions of the intermediary and dependent variables included perceived goods quality, customer satisfaction, customer loyalty, and customer retention. All the questions are 7 points likert scales used number 7-1 presented very strong agree to very strong disagree and positive semantic statement.

9. Result

9.1 Data Validation

To measure the internal consistency of the collected date, this study assessed the instrument's reliability by the Cronbach Alpha coefficient. The result presented in the table 1. All Cronbach alpha values reach the level of generally considered acceptable reliability.

Table 1. Cronbach Alpha coefficient value

Constructs	Number of items	a
Perceived customer profile using	2	0.78
Perceived participation	2	0.66
Goods quality	5	0.86
Customer Satisfaction	4	0.89
Customer Loyalty	6	0.80
Customer Retention	1	1.00

The questions were adapted from relative researches and examined by two experts. Questions were modified to reflect problems encountered by the pretest subjects. The content validity and face validity would be acceptable.

To ensure the subjects had perceived the scenarios

in the right aspect, this doubt was tested using the two-tailed t-test. The results presented in table 2, 3, 4, and 5.

Table 2. Mean and St. Dev. of high and low customer profile

	Treatment	n	Mean	s.d.
Customer profile	H	49	5.73	1.24
	L	47	4.75	1.63

Table 3. t-test result of high and low customer profile

	t-value	d.f.	p-value
Customer profile	3.328	94	0.001*

*p<0.05

Table 4. Mean and St. Dev. of high and low customer participation

	Treatment	n	Mean	s.d.
Participation	H	45	5.46	1.17
	L	51	4.89	1.52

Table 5. t-test result of high and low customer participation

	t-value	d.f.	p-value
Participation	2.016	94	0.047*

*p<0.05

The results show that most of subjects perceived the right scenario and the high and low degree of manipulation also made significant difference.

9.2 The effect of customer profile

Table 6 shows the result of main effect of two independence variables on all dependence variables.

Table 6. Results of MANOVA

		F-value	p-value
Customer Profile	Goods quality	5.033	0.027*
	Customer satisfaction	1.303	0.257
	Customer loyalty	2.002	0.160
	Customer retention	0.140	0.709
Customer	Goods quality	1.064	0.305
Participation	Customer satisfaction	1.440	0.233
	Customer loyalty	0.333	0.565
	Customer retention	0.303	0.583

*p<0.05

The result shows that the use of customer profile would reflect on customers' perception of goods quality (p=0.027). Thus null hypothesis H1 is rejected. That is, the degree of using customer profile by company is positively related to customers' perception of goods quality. This means subjects have perceived the service was designed based on their historic transaction and are more satisfied for their needs thus raised their perception on the goods quality.

9.3 The effect of customer participation

The result indicated customer participation is not significantly related to the subjects' perception on goods quality, customer satisfaction, loyalty and retention (see table 6). Thus there is no significant evidence to reject the null hypothesis 2 and 4. Wu [34] suggests that perceived participation should be an intermediary between participation and user satisfaction in the information system development research area. It would be discussed later of this paper to see if the perceived participation makes different.

9.4 The effect of goods quality

The effect of perceived goods quality on the CRM performance is presented in the table 7. It shows that goods quality makes significant effect on the customer satisfaction, loyalty, and retention thus the hypothesis 3 is rejected.

Table 7. The effect of goods quality

		F-value	p-value
Goods Quality	Customer satisfaction	9.313	0.000*
	Customer loyalty	4.698	0.000*
	Customer retention	3.013	0.000*

*p<0.05

10. Discussion

According to Wu [34], perceived participation is an intermediary between user participation and user perceived success and satisfaction on the information system development. Thus here to see if the same result comes out in this study. Table 8 and 9 shows the effect of perceived participation.

Table 8. The effect of Customer participation to Perceived participation

		F-value	p-value
Customer participation	Perceived participation	4.063	0.047*

*p<0.05

Table 9. The effect of Perceived participation

|		F-value	p-value
Perceived participation	Goods quality	7.78	0.000*
	Customer Satisfaction	9.55	0.000*
	Customer Loyalty	4.861	0.000*
	Customer Retention	3.845	0.000*

*p<0.05

The results shows that perceived participation indeed intermediate between customer participation and customer perception of goods quality, customer satisfaction, loyalty, and retention.

11. Conclusion

Based on the finding of this study, it's necessary to modify the research framework to suit the results of test. Figure 2 shows the final mo del.
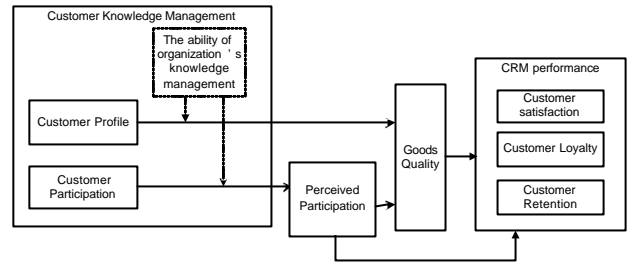
Figure 2. Modified model

This study investigated the effect of customer profile and customer participation on the goods quality. The finding suggests that the organization apply customer profiles into practical characteristics of products or service will raise the customer perceived goods quality and further affects the CRM performance. In this study, since the condition is simulated, it can be argued that the effect would be greater when the customers see their real profiles were used. Base on this study's findings, the impact of customer participation on goods quality and CRM performance is mediated by the perceived participation. In this study, users did not actually interact with representatives from the company. It can be argued that the effect would be greater when the customers interact with real person. This process changes customer's attitude toward this organization and reflect on customer satisfaction, loyalty and retention.

Although every effort was made to accomplish the scenarios of experiment toward be a near-real environment, limitations do exist because the subjects knew it is experiment and have different levels of perception as customers of an on-line bank. These would cause the inaccuracy of results between scenarios environment and the real-world cases.

Overall, this study explores the different dimensions of CRM theoretical development drawn from service research area in the context of service industry as main trend business world. These findings can be considered as the elements of building strong customer relationship that ultimately is needed in order to survive in today's competitive environment.

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