

# The effects of customer relationship management relational information processes on customer-based performance



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## ABSTRACT

This study investigated the influence of the completeness of CRM relational information processes on customer-based relational performance and profit performance. In addition, interaction orientation and CRM readiness were adopted as moderators on the relationship between CRM relational information processes and customer-based performance. Both qualitative and quantitative approaches were applied in this study. The results revealed that the completeness of CRM relational information processes facilitates customer-based relational performance (i.e., customer satisfaction, and positive WOM), and in turn enhances profit performance (i.e., efficiency with regard to identifying, acquiring and retaining, and converting unprofitable customers to profitable ones). The alternative model demonstrated that both interaction orientation and CRM readiness play a mediating role in the relationship between information processes and relational performance. Managers should strengthen the completeness and smoothness of CRM information processes, should increase the level of interactional orientation with customers and should maintain firm CRM readiness to service their customers. The implications of this research and suggestions for managers were also discussed.

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## 1. Introduction

In the contemporary business marketplace, firms must make a great deal of effort to compete with rival companies. In order to quickly respond to customer requirements and further establish favorable relationships, firms develop customized products or services to create different levels of value for individual customers. Based on this market trend, customer relationship management (CRM) has been widely recognized as an important business approach to build long term, profitable relationships with specific customers [12,30].

CRM is a set of processes enabling systems to support a business strategy. It is comprised of four major dimensions, including customer identification, attraction, retention, and development of lifetime value based on serving customers better and developing sustainable relationships [30]. Wang pointed out that development of close and long-term relationship with customers and turning them into loyal customers are important aspects of successful marketing because customers are crucial assets that firms must learn from and manage well for full competitive value [48]. However, whether long-term customers can bring profit to firms is always a paradox inherent in CRM implementation.

Coltman et al. pointed out that the relationship between IT investment and firm performance can be either negative or positive [12]. This is very dependent on how firm performance is defined. In the

context of CRM, there are various metrics used to define firm performance, including financial [31], the elements of the Balanced Scorecard [10], and those that are either process-related [25] or sales related [4], as well as those that are related to customer satisfaction and economic performance [23]. In addition, Coltman et al. proposed a model of CRM performance, evaluated from the perspective of human knowledge, IT infrastructure and business architecture [12]. However, studies using firm-based CRM performance evaluation metrics have seldom emphasized customer-based evaluations of CRM performance. Another important purpose of firm implementation of CRM is shortening the distance between firms and their customers by providing quick response time and developing long-term relationships. This implies that customer opinions and reactions can also be considered to be an important source of information related to firm implementation of CRM. Whether CRM relational information process can facilitate consumer-based performance becomes an important question that needs to be answered. Therefore, it is necessary to study customer-based performance of CRM, as it has rarely been discussed in prior studies.

Customers are considered to be important capital leading to firm sustainability. Ramani and Kumar proposed a consumer-centric metric for the purpose of measuring consumer-based performance, which was developed based on the concept of interaction orientation [37]. In their study, consumer-based performance included two measures, customer-based relational performance, which consists of customer satisfaction, customer ownership, and positive word of mouth (WOM), and customer-based profit performance, which includes successful identification of profitable customers, efficiency of the acquisition and

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retention process, and conversion of unprofitable customers to profitable ones [37]. Accordingly, the current study attempts to propose a model and adopts the concept of Ramani and Kumar to evaluate CRM customer-based relational performance and profit performance, which is believed to be more comprehensive and to cover both attitudinal and behavioral dimensions [37]. Furthermore, this study also posits that the CRM relational information process can indirectly facilitate profit performance via relational performance.

Taking into consideration the trend toward individual marketing, this study also includes the concept of interaction orientation in the research model. Homburg and Muller pointed out that interaction orientation may support the formation of a trustworthy, personal relationship with customers and may in turn lead to an increase in customer loyalty [19]. Ramani and Kumar (2008) considered the idea that interaction orientation reflects a firm's ability to interact with its individual customers and to take advantage of information obtained from them through successive interactions in order to achieve profitable customer relationships [37]. Thus, interaction orientation is proposed to assist in smoother accomplishment of CRM relational information processes and further, cooperatively promotes customer-based performance.

The use of a CRM system is a technology-oriented business strategy. Yang mentioned that a successful CRM is largely depended on internal IT service capability [50]; it has been shown to contribute to the ability of firms to achieve superior performance. Reinartz et al. suggested that CRM-compatible organizational alignment and CRM technology positively moderate relationships between CRM processes and economic performance [38]. This infers that a firm's CRM readiness is a facilitator of information processes leading to better firm performance. Firm CRM readiness has rarely been adopted in prior studies on this topic; therefore, the current study includes it in the research model as a moderator.

Based on the discussion above, this study presents a framework with which to explore how a CRM information system is manipulated and how the performance of a CRM informational system is affected in a service industry. The main purpose of this study is (1) to evaluate whether well-built information processes have a positive influence on customer-based relational performance (customer satisfaction, customer ownership, and positive word of mouth), and profit performance (successful identification of profitable customers, efficiency of the acquisition and retention process, and conversion of unprofitable customers to profitable ones); (2) to examine the indirect effect of the information process on profit performance via relational performance; and (3) to assess the moderating effect of interaction orientation and CRM readiness on information processes leading toward customer-based performance.

## 2. Literature review and hypotheses development

### 2.1. CRM relational information processes

CRM takes advantage of information technology (IT). It not only enhances the flow of information within an organization, makes it easier to store customer data and increases information accessibility [17], but also leads to greater insights into customer needs, behavior and expectations by developing and maintaining interactive one-to-one relationships [42]. Jayachandran et al. proposed a CRM relational information process, which included information reciprocity, information capture, information integration, information access, and information use, and expected the process to enable facilitation of CRM performance [22]. Hillebrand et al. pointed out that relational information processing is a process in which firms actually engage in the systematic registration, integration, and analysis of customer information [17]. The key objective of the relational information process is a focus on initiating, maintaining, and retaining long-term customer relationships [3].

Accordingly, information reciprocity refers to processes that enable customers to interact and share information with firms and also enable firms to respond to customers [22,28,40]. Information capture processes acquire information from customer interactions with various sources and channels that are critical aspects of relevant information processes. Information integration means firms integrate customer information collected from various sources, such as inter-organizational and external sources [17]. Information access is defined as a situation in which employees in organizations access updated customer information that has been gathered from other departments. Information use means that organizations utilize customer information to tailor their products for individual customers and provide different marketing strategies and services.

Based on the above discussion, the relational information process is defined as the process of segmenting customers and tailoring relevant offerings in order for them to create value for a firm [22]. Firms can have contact with their customers and gather relevant data at the same time through various channels. Data then are stored in databases that can be analyzed and transformed into useful information and concurrently supplied to front offices to enable the management of customer relationships.

### 2.2. Customer-based performance

Chang and Wong mentioned that CRM enhances a company's competitive capabilities, such as those related to cost reduction and market share enlargement, within an environment consisting of a web-based value chain integrated by internal operations, suppliers and customer relationships [8]. This study applies customer-centric performance measures: customer-based relational performance and customer-based profit performance [37].

#### 2.2.1. Customer-based relational performance

The primary focus of CRM is the building and maintaining of profitable customer relationships [11]. However, long term customer retention is based on consumer attitudes toward firms. Measurements of customer-based relational performance stress the evaluation of the relationship between firms and customers based on customer attitudes toward a given firm. Ramani and Kumar identified measures of customer-based relational performance in terms of three indicators: customer satisfaction, customer ownership, and positive word-of-mouth (WOM) [37].

Satisfaction and WOM have been widely adopted for measuring the attitude of customers toward firms (e.g., [16,44]). Eisingerich et al. mentioned that satisfying customers not only can fortify the strength of their relationships with firms, but also can generate positive WOM [16]. Customers who make personal referrals not only believe that a company offers superior economic value, but also perceive advantages related to their relationship with the company [6]. Customer ownership refers to the degree to which customers feel accountable to firms and actively seek a firm's financial well-being [37].

**2.2.1.1. CRM relational information processes and customer-based relational performance.** CRM solutions must enable firms to acquire, store and analyze information about customer needs in order to obtain revenue [50]. Wang et al. pointed out that effective information acquisition and dissemination is essential to create and manage close customer relationships [47]. Through CRM relational information processes, firms can capture customer data completely and transform that data into useful information; thereupon, firms can apply the information to understand customer needs and to develop marketing strategies. Customers are approached using individualized offers generated from specific information, such as transaction history and personal preferences that are more likely to match their specific desires [28]. As a result, customers can actually have their needs met, and customer satisfaction for firms is increased. Additionally, satisfied customers will generate positive WOM. Customer satisfaction and WOM facilitate the ability of firms to sustain long term relationships with customers.

The completion of CRM relational information processes requires collaboration among all of the various functions. This results in a complete realization of customer needs and adequate utilization of customer information to design marketing activities. Moreover, Jayachandran et al. discovered that organizational information processes have a positive effect on customer relationship performance [22]. Customers can obtain what they want, and firms can gain profit from customer satisfaction; meanwhile customer satisfaction can yield positive WOM communication about firms. According to the above description, the following hypothesis is proposed:

**H1.** CRM relational information processes positively affect customer-based relational performance.

### 2.2.2. Customer-based profit performance

CRM is the overall process of building and maintaining profitable customer relationships by delivering superior customer value and satisfaction [40]. Ramani and Kumar identified the measure of customer-based profit performance in terms of three indicators: identification of profitable customers, acquisition and retention of profitable customers, and conversion of unprofitable customers to profitable ones [37]. These three dimensions are applied to measure customer value, and firms can assign resources and develop marketing strategies based on these indicators.

In a customer-centric business context, the performance of the three indicators referenced above is important in regard to reducing customer-related costs. This not only can increase firm revenue, but also can help firms handle problematic customers. Persson pointed out that changes in customer behavior are key factors related to reducing customer-related costs [34]. Thus, customer identification enables firms to monitor the changing behavior of profitable customers and the reasons for such changes, and acquisition and retention performance indicates which customers are the right targets of promotional activities as well as those who can be made more profitable. When the right customers have been identified, acquired, retained, and converted, marketing campaigns can be launched accurately based on consumer needs, which will ultimately increase firm revenue.

**2.2.2.1. CRM relational information processes and customer-based profit performance.** Becker et al. [3] suggested that firms need to identify previously profitable but currently inactive customers and initiate appropriate activities to reactivate those customers. Well-built CRM relational information processes allow firms to gather customer information that contains customer preferences, transaction histories, and their personal backgrounds, and it also helps firms to determine the customer value driven from these factors. Therefore, firms can align resources efficiently and find valuable customers to focus their attention on. With respect to the implementation of marketing strategies, a firm's ability to assess customer profitability and the quality of a firm's customer information should be important [18,28]. According to Venkatesan and Kumar, relational information processes help firms identify which customers are profitable and also help them determine which customers to prioritize in their daily business processes [46].

Indeed, firms that invest in information processes can have a greater understanding of customer needs, the reasons behind these needs, and how they change over time [17]. Firms are able to distinguish the characteristics of both profitable and unprofitable customers, and they can use this information to identify potentially profitable customers [39]. Furthermore, firms can implement marketing campaigns based on customer needs in order to facilitate new interaction with inactive customers. Thus, firms that have well-built information processes and provide customized and personalized offerings can evoke customer

intention to maintain long-term relationships. Accordingly, the following hypothesis is proposed:

**H2.** CRM relational information processes positively affect customer-based profit performance.

**2.2.2.2. Customer-based relational performance to customer-based profit performance.** Customer-based relational performance measures intangible CRM benefits, whereas customer-based profit performance measures tangible CRM benefits. Individual customer revenue and costs both increase as customer satisfaction improves. Through better customization of both product and service offerings, customer retention and profitability can be increased [9].

Customer-based relational performance assesses performance attitudinal variables, whereas customer-based profit performance measures performance on behavioral variables. Kim et al. pointed out that the theory of planned behavior (TPB) explains that favorable or unfavorable attitudes (i.e., satisfaction, ownership, and WOM) are directly proportional to the strength of the behavior intended to either create or mitigate such attitudes (i.e., identifying profitable customers, acquiring and retaining profitable customers, and converting unprofitable customers to profitable ones) [24]. Thus, a higher level of customer-based relational performance has direct effects on customer-based profit performance. Shyu et al. mentioned that customer satisfaction is a result of the interaction experience (service) with a firm [41]. Firms can determine customer requirements through information processes designed to analyze their purchase histories and preferences, thus helping sales managers to identify and target their most valuable customers. Therefore, satisfied or unsatisfied customers need to be identified and retained, but unsatisfied customers need to be reacquired and converted back into satisfied customers. As long as customers are satisfied with firm offerings, they will exhibit repurchase behavior [42]. Accordingly, the following hypothesis is proposed:

**H3.** Customer-based relational performance positively affects customer-based profit performance.

### 2.3. Interaction orientation

Firm–customer relationship is a two-way interaction. This two-way interaction allows firms and customers to understand each other better. Chen et al. indicated that interaction orientation is closely related to marketing strategy concepts, which emphasizes a firm's ability to effectively interface with its customers [11]. Brown et al. suggested that interaction orientation is an employee's tendency or predisposition to meet customer needs in an on-the-job context [6]. In order to maximize the overall value of customer portfolios, firms should implement this marketing strategy (i.e., interaction orientation) to understand customer drivers and profitability so that they can tailor what they offer accordingly [29]. Once customers have a pronounced interaction orientation, they will relate to a firm's salesperson as a friend [19], and a personal relationship is thus established.

Additionally, while analyzing customer data, firms are focused at the individual level. Through customer profiles, firms acquire knowledge about customers, such as personal traits and purchase preferences. Therefore, firms are able to offer customized or personalized products/services in terms of customer requirements. Meanwhile, interaction orientation can create value for firms and customers.

#### 2.3.1. Interaction orientation on the relationship of CRM relational information processes and customer-based performance

Each customer has a profile of recorded purchase preferences and a range of purchase behaviors. Amit et al., and Jaramillo and Grisaffe noted that customer orientation should have positive effects on performance [2,21]. Because customer-oriented selling can increase customer

satisfaction by providing accurate offers based on customer needs, satisfied customers will reward salespersons by continuing to place repeat orders as well as spreading positive WOM [35]. With a higher level of interaction orientation, customers thus engage in actions related to customer value, such as those that involve listening to customer feedback and solving customer problems. This leads to win–win outcomes because customers are served in better and more individually relevant ways, producing higher levels of success for both the sales force and the organization [21]. Chen et al. inferred that firms with high interaction orientation are capable of attracting and retaining valuable customers, developing customers as a skilled resource, and facilitating customer ownership of firms [11].

Therefore, through the use of CRM relational information processes, firms are able to gather and utilize complete customer data by which to design customized products/services to meet the requirements of their customers. According to the above description, the following hypothesis is proposed:

**H4a.** *The positive effect of CRM relational information processes on customer-based relational performance is higher for firms with higher interaction orientation.*

CRM is a management approach that involves identifying, attracting, developing and maintaining successful customer relationships over time in order to increase retention of profitable customers [5]. Chen et al. pointed out that when firms adopt a higher level of interaction orientation, these firms will be able to better allocate their resources toward developing and managing profitable relationships in the marketplace [11]. This infers that the application of CRM information processing allows identification of customer information better when interaction orientation is high. The more frequently a firm interacts with its customers, the more detailed is the information that can be collected. The greater the understanding of what the customer actually needs, the more accurately segmentation can be divided. Therefore, firms are able to determine more easily which marketing campaigns (e.g., promotions or offers) to launch and which are suitable for a particular customer segment.

Furthermore, when a firm adopts a higher level of interaction orientation, non-profitable or problematic customers also can be identified using informational processing. As the information processing activities generate insights about customers (e.g., the actual needs of customers, the reason behind these needs, and how the needs change over time) [17], firms are able to determine whether they should or shouldn't abandon non-profitable or problematic customers, or whether they should continue to interact with them by using different marketing strategies, thus converting them into potentially profitable ones. According to the above discussion, Hypothesis 4b is proposed as follows:

**H4b.** *The positive effect of CRM relational information processes on customer-based profit performance is higher for firms with higher interaction orientation.*

## 2.4. CRM readiness

CRM readiness means that firms collaborate with regard to CRM infrastructure, software, departments, and employees in order to implement CRM relational information processes effectively. These critical success factors for CRM implementation belong partly to organizational attributes and partly to technological attributes [37]. Therefore, CRM readiness consists of two dimensions, which are organizational readiness and technological readiness.

### 2.4.1. Organizational readiness

Organizational readiness refers to the capability of firms to adopt information technology systems [45]. A successful system application is highly dependent on how good the preparation is for such

implementation, as well as on support related to internal function cooperation and adequate financial resources. Chan and Ngai stated that the preparations leading to IT adoption include the level of IT knowledge among top management and individual learners, the compatibility of IT use within the organization, the size of an organization, and its financial resources [7]. Therefore, cross departments must work together and support each other, and senior executives also have to commit and support the adoption of a CRM system. Hung et al. indicated that changes in an organization (e.g., IT innovation adoption) depend not only on firm size and market factors, but also on the preferences of senior executives as well as their readiness to change [20]. Furthermore, a customer-oriented culture is also essential for the quality and extension of customer-knowledge creation and dissemination, as well as the implementation of a relationship-management strategy [43]. Therefore, when organizational culture advocates customer-centric methodologies to measure firm performance, this increases the readiness of firms to implement CRM.

### 2.4.2. Technology readiness

Information technology plays a critical role in CRM solutions. These technologies include hardware, software, and network investment, and they are also designed to facilitate processes and exchanges. Yang pointed out that CRM IT service capability serves a coordination function that helps facilitate conversations between counter staff and customers [50]. According to Lancioni et al., and Chang and Ku, the most remarkable benefits of IT utilization are effective communication with customers, improving service quality and reducing cost [9,27]. Thus, the technology readiness of firms for implementing CRM is another prerequisite factor of success.

The use of CRM technology is expected to boost the ability of an organization and to help sustain profitable customer relationships by enabling information to be integrated and shared smoothly, thus facilitating more efficient and effective firm–customer interaction, analysis of customer data, and customization of responses [14]. A high level of technology readiness fosters the capturing of customer data and the analysis of customer information, and also provides a coherent view of customers. Firms understand each customer's individual demands and adopt differentiation marketing based on these demands. Similarly, technology readiness supports the development of capabilities that result in a potential for competitive advantage.

**2.4.2.1. CRM readiness on CRM relational information processes and customer-based performance.** CRM readiness (i.e., support of organization and technology) represents a firm's strategic orientation [3]. It will consequently leverage the effectiveness of firm implementation and customer-based performance. Firms that are knowledgeable about CRM are able to implement CRM systems (i.e., relational information processing) effectively for the purpose of capturing and consolidating customer data proficiently and understanding customer values, potentials, needs and preferences. Firms are able to design marketing campaigns intended to fulfill different customer needs [9], which can enhance customer satisfaction and generate positive WOM communications. Reinartz et al. stated that firms that use technology in their organizations regard technology as a resource that supports the implementation of information processes [38]. According to the above description, Hypothesis 5a is proposed as follows:

**H5a.** *The positive effect of CRM relational information processes on customer-based relational performance is higher for firms with higher CRM readiness.*

Similar to the above discussion, a high level of CRM readiness enables CRM relational information processes to be implemented smoothly. When firms have completed information on each customer, they are able to segment the market in terms of each customer's value.

**Table 1**  
Summary of case organizations.

Constructs	Company		
	Tsann Kuen Enterprise (TKE)	Shin Kong Financial Holding (SKFH)	Kuo Hua Life Insurance (KHL)
<i>CRM relational information processes</i>			
Information reciprocity	Internet, salesclerk, and call center are the communication channels.	Sales representatives interact with customers by visiting.	Sales representatives interact with customers by visiting them.
Information capture	Encouraging customers to join the membership, then the firm could get non-specific information such as name, address, and phone numbers; when customers finished purchasing, employee would record the information from the buying history.	Sales representatives visit customers to collect their data. The firm held product release.	Sales representatives apply face-to-face interview with customers to gather information.
Information integration	The record information outlets are sent to back office to make combination, analysis, and storage.	Collected data are transferred to central database for integrating and analyzing.	Collected information was set up profile by specific department. The information in database would be analyzed and incorporated.
Information access	Employees use CRM system interface to obtain relevant information.	Sales representatives have exclusive CRM system to analyze the limited scope of data.	Sales representatives are able to use devices such as PC, PAD, and mobile to access the information for the requirements.
Information use	The results integrated information is used to design marketing activities.	The firm would use the information to do cross selling, STP, and individual marketing.	The firm could use the information to design promotion plan. Sales representatives have dedications to CRM system to manage their customers.
Summary	Front office collects customer information as joint membership or customer center. Collected data would return to back office to analyze and integrate data from aspect of channels. The information is stored in database, the relevant employees could access database to meet their needs of job.	Front office collects customer information as joint membership or customer center. After that, the collected data would return to back office to analyze and integrate data from the aspects of channels. Relevant employees could access database to assist their needs of job.	Front office collects customer information as joint membership or customer center. The collected data would return to back office to analyze and integrate from aspect of channels. The information is stored in the database, and relevant employees could access to assist their needs of job.
<i>Customer-based relational performance</i>			
Customer satisfaction	The complaints of customers are solved through standard processes.	The firm deals with customer complaints through call center; generally, sales representatives are easy to reduce customer dissatisfaction.	The firm deals with customer complaints through call center; generally, sales representatives are easy to reduce customer dissatisfaction.
Customer ownership	Customers actively seek the information about promotion of firms.	Customers inquire the information about rates and new products which relate to their profit	Customers consider the financial well-being of company whether buy the products or not.

Positive WOM	Salesclerks maintain well-relationship with customers is helpful for appealing new ones.	Customers recommend to others with the satisfaction of product/service.	Customers recommend to others with reasonable compensation for dissatisfaction of product/service.
Summary	<ul style="list-style-type: none"> <li>•Customer satisfaction: Increase</li> <li>•Customer ownership: Low</li> <li>•WOM: Positive</li> </ul>	<ul style="list-style-type: none"> <li>•Customer satisfaction: Increase</li> <li>•Customer ownership: Medium</li> <li>•WOM: Positive</li> </ul>	<ul style="list-style-type: none"> <li>•Customer satisfaction: Increase</li> <li>•Customer ownership: High</li> <li>•WOM: Positive</li> </ul>
<i>Customer-based profit performance</i>			
Identifying profitable customers	Buying history as a segment of profitable customers.	The firm uses core system developed in house to segment customers and meet individual needs.	Each customer has a particular profile including personal data, buying history and so on. Sales representatives can use CRM system to identify profitable customers.
Acquiring and retaining profitable customers	Periodically hold sales promotion for membership to stimulate customer spending on firms.	Sales representatives keep contacting with customers for comprehending customer dynamic needs.	Sales representatives keep contacting with customer for the comprehension of customer dynamic needs.
Converting unprofitable customers to profitable ones	Salesclerk would persuade customers to joint membership, or promote by discount.	Sales representatives practice the approach of door-to-door to understand unprofitable customers' needs; the firm applies direct marketing such as telephone, DM and so on to stimulate selling.	Sales representatives practice the approach door-to-door to understand unprofitable customer needs.
Summary	<ul style="list-style-type: none"> <li>•Identifying profitable customers: Back office.</li> <li>•Acquiring and retaining profitable customers: Member discount.</li> <li>•Converting unprofitable customers to profitable ones: Sales representatives.</li> </ul>	<ul style="list-style-type: none"> <li>•Identifying profitable customers: Back office and sales representatives.</li> <li>•Acquiring and retaining profitable customers: the maintenance for customers visiting.</li> <li>•Converting unprofitable customers to profitable ones: Telephone/direct marketing.</li> </ul>	<ul style="list-style-type: none"> <li>•Identifying profitable customers: Back office and sales representatives.</li> <li>•Acquiring and retaining profitable customers: Customers visiting maintaining.</li> <li>•Converting unprofitable customers to profitable ones: Telephone/direct marketing, door-to-door visiting.</li> </ul>
Interaction orientation	Communication with customers based on individual e-mail or message.	Customization is employed by service/product designing.	According to individual customer need, sales representatives adjust insurance terms.
Summary	Marketing activities depend on purchasing history.	Most of service/products are offered according to individual customer needs.	Insurance terms depend on customer needs.
<i>CRM readiness</i>			
Organizational readiness	There are over 10-year experience of using CRM system. It is easy for employee to operate.	On-job-training is adopted by CRM readiness. Employees are learning by doing. The system is easy to access.	The CRM system is easy to operate. Employee can be skilled in a short term of training.
Technology readiness	The CRM system is stable, but it sometimes needed for adjustment or modification.	Employing core system built in house, IBM system and little outsourcing software is over 20 years. This system can be utilized business activities and easy to adjustment or modification.	Applying CRM system developed in house is adopted over 20 years.
Summary	<ul style="list-style-type: none"> <li>•Organizational readiness: Fitness</li> <li>•Technology readiness: Well-built</li> </ul>	<ul style="list-style-type: none"> <li>•Organizational readiness: Fitness</li> <li>•Technology readiness: Well-built</li> </ul>	<ul style="list-style-type: none"> <li>•Organizational readiness: Fitness</li> <li>•Technology readiness: Well-built</li> </ul>

CRM information relates not only to current customers, but also to future potential customers, thus enabling anticipation of and response to their needs. Wang and Feng pointed out that CRM capabilities (i.e., CRM readiness) reflect a firm's skills and accumulated knowledge used to identify attractive customers and prospects and to initiate and maintain relationships with these customers and to leverage these relationships into customer-level profits [49]. Therefore, if firms' CRM readiness is high, CRM activities, such as customer interaction, relationship upgrading, and relationship win-back, can be more efficient [49]. Indeed, high readiness CRM enables firms to reach high levels of profitability because of the use of databases, data warehouses, data mining, one-to-one marketing, automated call centers and sales force automation [29]. According to the above description, Hypothesis 5b is proposed as follows:

**H5b.** *The positive effect of CRM relational information processes on customer-based profit performance is higher for firms with higher CRM readiness.*

### 2.5. Conceptual framework

Fig. 1 demonstrates the conceptual framework of the study. It posits that relational information processes not only enable firms to provide customized offers to each customer that enhance customer-based relationship performance (i.e., customer satisfaction, customer ownership, and WOM), but that also facilitate customer-based profit performance (i.e., identify and convert unprofitable customers to profitable ones, and improve the efficiency of acquisition and retention processes). Furthermore, when firms adopt interaction orientation as a marketing strategy, such firms can have a better understanding of the different needs of each customer and can also identify potential customers. Different marketing campaigns can be conducted according to different customer segmentations. This can result in higher levels of customer satisfaction and can also lead to positive WOM. In addition, CRM readiness is also a key to success. If firms have higher levels of CRM readiness, CRM activities and information processes can operate more smoothly, and ultimately, both relational and profit performance will be enhanced. Therefore, interaction orientation and CRM readiness were proposed as moderators in the conceptual model.

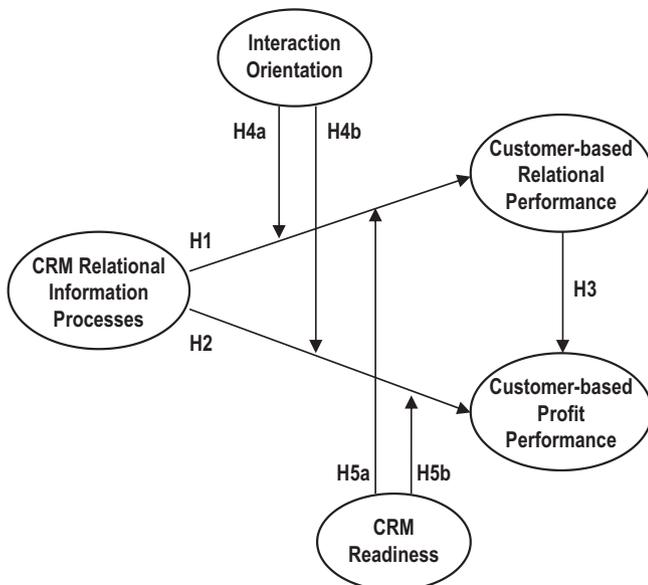


Fig. 1. Conceptual framework.

### 3. Research design

This study was designed using both qualitative and quantitative approaches. The conceptual framework was developed based on previous academic literature and concepts. There were two reasons for conducting a qualitative case study. Firstly, because it ensures that a framework is rational and reliable, empirical evidence can support the framework concepts and can suggest whether the path is reasonable in practice. Secondly, this study was used to further understand how firms put in effort to obtain, analyze, integrate, and use customer information in order to increase customer-based performance in field practice. This was to ensure reliability of each construct's dimensions and measurement statements in practice. Thus, a qualitative approach consisting of individual in-depth interviews was initially adopted. After the confirmation of each constructs' dimension, a questionnaire survey was designed and adopted in order to conduct a subsequent field survey intended to obtain quantitative data for analysis. Eisenhardt and Yin suggested that a survey that combines qualitative and quantitative approaches is more precise and reliable [15,51].

A 7-point Likert-scale response format that ranged from 1 (strongly disagree) to 7 (strongly agree) was adopted for the questionnaire. All construct measures were revised from prior research, construct descriptions, and summaries.

- (1) CRM relational information processes (CRIP) were measured according to five dimensions in which firms' implemented information processes to capture and use customer information [22].
- (2) Customer-based relational performance (CBRP) was measured using three items: customer satisfaction, customer ownership and WOM [37]. However, the scale item, customer ownership, was removed in this study because the case study interviews revealed that few customers consider the financial well-being of the firms they are doing business with.
- (3) Customer-based profit performance (CBPP) is a depiction of firm efficiency using three items: customer-level profitability, balancing acquisition and retention of profitability, and converting unprofitable customers to profitable ones [37].
- (4) Interaction orientation (IO) was adopted from the research of Ramani and Kumar, and Reinartz et al., and considered firm adoption of information processes to be dependent on customer-oriented efforts to capture and integrate customer data [37,38].
- (5) CRM readiness (CR) includes two dimensions, organizational readiness and technological readiness, and was measured by a six-item revised form Reinartz et al. [38]. Two items of organizational readiness were modified from Abdinnour-Helm et al., and Palanisamy [1,32].

Coviello et al. mentioned that customer relationship programs were not only important in both services and goods firms, but also in business-to-business and business-to-customer markets [13]. Therefore, the study decided to select service industry with business-to-customer markets as research object. This service industry arena includes the retail trade, the financial industry, telecommunication, and IT, among others. The reason for selecting this industry was because CRM systems have been widely applied to service industries. These organizations are currently potentially increasing their utilization of technology and management of one-to-one relationships with potential customers in a context of rapid market transformation [33].

Three companies participated in the case study. The first is a 3C product retailer with extensive branches, Tsann Kuen Enterprise Co., Ltd. (TKE). The Yung Hua branch director, Mr. Daniel Yeh was participating in the interview. The second company is a financial services company, Shin Kong Financial Holding Co., Ltd. (SKFH), which provides a variety of financial products. The training lecturer, Mr. Kao was participating in the interview. And the third company is an insurance

company, Kuo Hua Life (KHL), which focuses on life insurance. The sales manager of Southern Taiwan, Ms. Yang was contacted to participate in the interview. An open-ended interview question list was e-mailed to the interviewee before the meeting.

After conducting the interviews, questionnaires were delivered to firms that were in service industries with business-to-customer markets. The respondents were required to be either marketing or sales managers.

#### 4. Summary of case organizations

Three companies participated in the case study. The participants, who had working experience in service industries, were fully qualified to be the main interviewees in this research as discussed above.

Through the interview process, there was an attempt to determine how practical actual businesses apply customer value management. The results of the interview were intended for use to ensure the validity of the measurement model and to design the paper-based questionnaire. Furthermore, there were five parts in the interview questionnaire: CRM relational information processes, customer-based relational performance, customer-based profit performance, interaction orientation, and CRM readiness.

To summarize the three case studies discussed above, CRM relational information processes were posited to affect customer-based relational performance and customer-based profit performance. The moderating terms, interaction orientation, and CRM readiness were examined to determine whether they would increase the effect of CRM relational information processes or customer-based performance. Table 1 illustrates the case summaries and compares the situation for each of the constructs and dimensions.

According to the findings resulting from the interviews, there were several common viewpoints. All interviewees agreed that firms adopt sales representatives, call centers, and other methods used for collecting customer data. The collected data are all stored in a central database, analyzed by separate departments, and integrated in order to convert it into useful information. Hence, customer information remains stored in the databases, and the front office is able to use this information to launch adequate marketing activities. Moreover, the interviewees all considered customer satisfaction to be a very important evaluation criterion for their companies. A high level of customer satisfaction was perceived to be equal to the willingness of customers to sustain a long term relationship with the firms under consideration, and it was believed that satisfied customers can generate positive WOM. They also agreed that their companies use customer information to segment markets depending on customer value. Developing potential customers was also viewed as a main concern for all of the interviewees because new customers can expand the market size of their firms.

The CRM system for each of the three companies was built in-house. In-house CRM systems can really match the organizational structure and business model of each company. For instance, financial industries emphasize customer privacy and avoid any risks for personal information to be stolen. As a result, such companies prefer to develop CRM systems in-house. The three companies have all applied in-house CRM systems for over 10 years. Thus, the CRM system has a user-friendly interface, and it is also compatible with their organizational structures.

Based on the case descriptions, most hypotheses were checked and received support from a practical business standpoint. Overall, CRM relational information processes were executed by the firms under consideration. CRM systems were found to enhance stronger firm–customer relationships. These firms promote new products and services to meet their customers' needs and to expand their service scope in order to increase customer loyalty. Specifically, CRM systems are regarded as tools to assist daily business operations in chain stores. For instance, they adopt POS to record the transactions of each customer, such as amount of purchase, number of purchases, item purchased and so on. However, financial organizations interact with their customers through both the CRM system and sales representatives.

Financial organizations collect each customer's up-to-date information and provide individual customers with customized products/services. Although chain stores and financial services are classified as service industries, the purpose of the CRM system is different for each of them.

Chain stores view a CRM system as a facilitator, whereas CRM systems for financial organizations are viewed as a medium for communicating with customers. This case study indicated that customers who purchase financial products such as insurance, funds, and other monetary-related items are concerned about the financial statements of firms. However, customers are rarely concerned about the financial well-being of firms when they purchase consumer products. Therefore, customer ownership in customer-based relational performance was not supported in the case study. Accordingly, the customer ownership dimension was excluded from the study conceptual framework.

#### 5. Results of data analysis

There were 48 items in the formal questionnaire, which included background information and demographic variables. A pilot test was conducted to evaluate reliability (Cronbach's alpha and an item-to-total correlation) and validity for the purposes of ensuring the readability and understandability of the items. Questionnaire items were revised based on the results of the pretest prior to conducting the formal survey.

Paper-based questionnaire was used for data collection. We selected the research subjects based on the list from China Credit Information Service Ltd., the 2011 top 5000 largest corporations in Taiwan. Meanwhile, 1000 corporations from service industry were randomly selected for questionnaire distribution, such as retail, finance, and technology, among others. There were 250 survey responses, and the response rate was about 25%. Forty-one were determined to be invalid due to incompleteness and illegitimacy of responses. As a result, 209 surveys were considered valid for further analysis. The majority of the respondents were aged between 20 and 29 (49%). Most of them had a Bachelor's degree or above (98%), and their working experience ranged from 1 to 5 years (46%; <3 years = 126; ≥3 years = 83). The largest employment sample was from the financial industry (52%), and the most frequent position was middle manager (56%). Moreover, the majority of the respondents were working in the marketing department of their companies (44.0%).

Before moving forward to the formal data analysis, we initially conducted a *t*-test to assess differences between junior (<3 years) and senior (≥3 years) working experience of respondents in all constructs. The *t*-test results revealed there were no significant differences between junior and senior respondents in all constructs. Thus, all data were suitable for further analysis. The formal data were analyzed by adopting CFA, which examined the adequacy of the measurement components and evaluated the reliability and validity of the constructs. Item-to-total correlations were above .50 (.570–.877) except for IC5, which was deleted. As a result, all remaining items had standardized factor loadings above the criteria of .50 (.570–.890).

In assessing reliability, although customer-based relational performance showed Cronbach's  $\alpha$  and CR values to be slightly lower than .70, the value was still considered in the acceptable range ( $\alpha = .680$ , CR = .657). Overall, all of the measures in this study could be regarded as having a satisfactory level of reliability. In regards to convergent validity, all factor loadings were revealed to be high and significant ( $t = >1.96$ ), and demonstrated high average variance extracted (AVE) for all constructs, which provided strong evidence of convergent validity. The results of CFA, reliability, and convergent validity are shown in Table 2.

The results of discriminant validity are provided in Table 3. A significantly lower  $\chi^2$  value for the model in which the trait correlations are not constrained to unity would indicate that the traits are not perfectly correlated and that discriminant validity is achieved. The results showed the change in the  $\chi^2$  of the constrained model was larger than 3.85 ( $p < .05$ ). Therefore, the discriminant validity was satisfactory.

**Table 2**  
CFA and reliability and validity index (n = 209).

Observed variables and descriptions	Item-to-total	Stand. factor loading	t	$\alpha$	Ave	CR
<i>CRM information processes</i>				.807	.551	.964
<i>Information reciprocity</i>						
IR1 We enable customers to have interactive communications with us.	.678	.632	9.741			
IR2 We provide customers with multiple ways to contact with the organization.	.635	.570	8.571			
IR3 We focus on communicating periodically with customers.	.686	.890	–			
IR4 We maintain regular contact with our customers.	.654	.823	13.64			
<i>Information capture</i>						
IC1 We collect customer information on an ongoing basis.	.557	.712	9.234			
IC2 We capture customer information from internal sources within the organization.	.531	.595	7.808			
IC3 We collect customer information by using external sources (such as market research agencies, syndicated data sources, and consultants).	.514	.647	8.459			
IC4 The information collected from customers is updated in a timely fashion.	.590	.762	–			
<i>Information integration</i>						
IG1 We integrate customer information from the various functions that interact with customers (e.g., marketing, sales, and customer service)	.579	.667	8.971			
IG2 We integrate internal customer information with customer information from external sources.	.686	.740	–			
IG3 We integrate customer information from different communication channels (such as e-mail, the Internet, fax, and personal contact).	.652	.736	9.883			
IG4 We merge information collected from various sources of each customer.	.606	.721	9.684			
<i>Information access</i>						
IA1 In our organization, relevant employees find it easy to access required customer information.	.685	.760	12.084			
IA2 In our organization, relevant employees can access required customer information even when other departments/functional areas have collected it.	.645	.668	10.262			
IA3 In our organization, relevant employees always have access to up-to-date customer information.	.798	.877	–			
IA4 In our organization, relevant employees have provided the information to manage customer relationships.	.690	.753	11.946			
<i>Information use</i>						
IS1 We use customer information to develop customer profiles.	.710	.764	13.032			
IS2 We use customer information to segment markets.	.795	.842	15.193			
IS3 We use customer information to assess customer retention behavior.	.811	.857	–			
IS4 We use customer information to identify appropriate channels to reach customers.	.743	.793	13.798			
IS5 We use customer information to customize our offers.	.707	.718	11.904			
IS6 We use customer information to identify our best customers.	.693	.698	11.437			
<i>Customer-based relational performance</i>				.680	.494	.657
CBRP1 The overall satisfaction level of customers is higher than the satisfaction levels of these customers with competing firms.	.515	.601	8.722			
CBRP2 A higher percentage of our new customers come to us because of referrals from our existing customers relative to our competitors.	.515	.792	–			
<i>Customer-based profit performance</i>				.894	.743	.896
CBPP1 Customers who were identified as potentially profitable by the firm turn out to be profitable in long term.	.742	.812	15.229			
CBPP2 A larger proportion of acquired customers remain profitable in the long run for the firm as compared to its competitors.	.828	.896	–			
CBPP3 The number of customers who were unprofitable last year and became profitable this year for the firm is greater than the number of customers who were profitable last year but became unprofitable this year.	.805	.875	17.424			
<i>Interaction orientation</i>						
IO1 The firm believes that customers' reactions to marketing action should be observed at the individual customer level.	.658	.736	9.782	.832	.554	.833
IO2 The firm has systems in place that record each customer's transactions.	.673	.759	10.039			
IO3 The firm encourages customers to share opinions of its products or services with the firm.	.618	.712	9.496			
IO4 The firm predicts each individual customer will contribute to its profits in the future.	.694	.770	–			
<i>CRM readiness</i>				.807	.561	.911
<i>Organizational readiness</i>						
OR1 We provide systematic training procedures for helping employees deal with different high- and low-value customers.	.687	.781	–			
OR2 We reward employees for building and deepening relationships with high-value customers.	.723	.740	11.198			
OR3 Project generated knowledge that was turned into standardized rules or ways of doing similar tasks.	.737	.742	11.244			
OR4 Overall, the author thinks the ERP project is very well run.	.747	.779	11.917			
<i>Technology readiness</i>						
TR1 We invest in technology to acquire and manage "real time" customer information and feedback.	.706	.738	10.928			
TR2 We have dedicated CRM technology in place.	.742	.732	10.834			
TR3 We have technologies that allow for one-to-one communications with potential customers.	.744	.766	–			
TR4 Relative to our competitors, the quality of our information technology resources is larger.	.660	.710	10.461			

As using self-reported data from a single source, we followed the recommendation of Podsakoff et al. to assess common method variance (CMV) effects [36]. Firstly, we conducted a Harman's one-factor test, which loaded all measurement items of all the constructs into a single exploratory factor analysis. The results showed the first extracted factor

accounted for 35.9% of the variance in the data, indicating that CMV was unlikely to be concerned. Secondly, we tested the inter-construct correlations that the highest correlation between the research constructs (.622 for CBRP-CBPP) was far below the threshold of .90, and all square roots of AVE were larger than all correlation magnitudes, indicating all

**Table 3**  
Results of chi-square difference tests.

Latent factor 1	Latent factor 2	Chi-square <sup>a</sup>		Change in chi-square <sup>b</sup>
CRIP	CBRP	248.061	190.883	57.178
CRIP	CBPP	260.404	190.883	69.521
CRIP	Interaction orientation	244.974	190.883	54.091
CRIP	CRM readiness	267.757	190.883	76.874
CBRP	CBRP	201.929	190.883	11.046
CBRP	Interaction orientation	206.426	190.883	15.543
CBRP	CRM readiness	221.163	190.883	30.280
CBPP	Interaction orientation	215.011	190.883	24.128
CBPP	CRM readiness	234.669	190.883	43.786
Interaction orientation	CRM readiness	227.214	190.883	36.331

CRIP: CRM relational information processes; CBRP: Customer-based relational performance.

<sup>a</sup>The chi-square for each latent factor 1 is on the left ( $df = 95$ ), and the chi-square for each latent factor 2 ( $df = 94$ ) is in the middle. On the left  $\chi^2$  value is constrained model, and on the right is unconstrained model.

<sup>b</sup>For changes in chi-square greater than 3.85,  $df = 1$ .

the constructs passed the criterion of discriminant validity and the potential effect of CMV was not a major concern.

The standardized coefficients and significances for the hypothesized paths of the structural models and model fit indices are shown in Fig. 2. The overall model fit was excellent (chi-square,  $p = 0.003$ ) and significant. The comparative fit index (CFI), the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI) and the normed fit index (NFI) were .974, .950, .914, and .944, respectively. The root mean square error of approximation (RMSEA) was .063 ( $< .08$ ). The path of hypotheses testing demonstrated that CRIP was positively associated with CBRP ( $\beta = .652, p < .001$ ); thus, H1 was supported. H2 predicted that the CRIP would lead to CBPP and was not significant ( $\beta = .013, p > .05$ ). H3, which predicted that superior CBRP would lead to superior CBPP, was supported ( $\beta = .929, p < .001$ ).

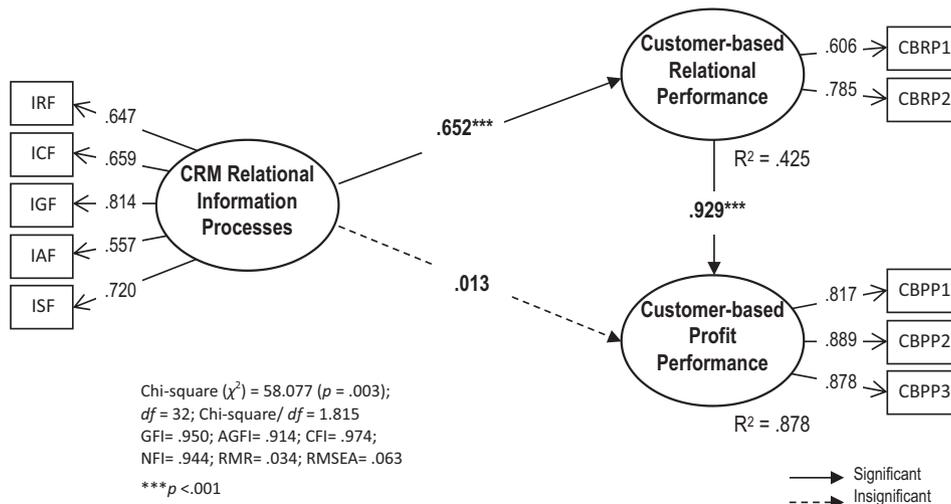
To test the moderating effects of interaction orientation (IO) (H4a and H4b) and CRM readiness (CR) (H5a and H5b), hierarchical regression analysis was conducted. The results of the hierarchical regression analysis are reported in Table 4. Firstly, H4a and H5a were tested; customer-based relationship performance (CBRP) was the dependent variable. Model 1 and Model 2 showed the direct effects of CRIP, IO, and CR on CBRP to be significant. In Model 3, the interaction effects demonstrated interaction orientation have a positive and significant effect on the relationship between CRIP and CBRP ( $\beta = .146, p < .05$ ). Therefore, H4a was supported. However, the interaction effect between

CRM relational information processes and CRM readiness had a negative and significant effect on CBRP ( $\beta = -.222, p < .01$ ). The result was contrary to the original prediction of a positive effect of CRIP on CBRP. Therefore, H5a was not supported. Variance inflation factors (VIF) scores were computed for both models to check for multicollinearity. The computed VIF scores had values between 1 and 2, below 10. Hence, there was evidence that suggested that multicollinearity did not affect the estimates in this study.

Secondly, H4b and H5b were tested; customer-based profit performance served as the dependent variable. The main effect of CRIP, IO, and CR in both models 1 and 2 showed significant results. However, both the interaction effect of CRIP  $\times$  IO, and CRIP  $\times$  CR demonstrated insignificant results. Therefore, both H4b and H5b were not supported. By computing variance inflation factors (VIF) scores, there was evidence that multicollinearity did not affect the estimates in this study.

To summarize the hypotheses testing in Table 5, out of the three direct effects, two were supported (H1 and H3), and one was not (H2). Moreover, of the four interaction effects (moderating effects), one was supported (H4a), and the rest were not (H4b, H5a, and H5b).

In order to completely examine the role of interaction orientation and CRM readiness, an alternative SEM analysis was conducted to test the mediating effects of both variables. The results of the alternative model are provided in Fig. 3. The model fit indices indicated good fit for the alternative model (chi-square/df = 2.189; GFI = .892; AGFI = .849; CFI = .937;



**Fig. 2.** Results of structural equation modeling (main effects).

**Table 4**  
Results of hierarchical regression.

Dependent Predictor variable	CBRP (H4a and H5a)			CBPP (H4b and H5b)		
	Model 1 ( $\beta$ )	Model 2 ( $\beta$ )	Model 3 ( $\beta$ )	Model 1 ( $\beta$ )	Model 2 ( $\beta$ )	Model 3 ( $\beta$ )
<i>Direct effects</i>						
CRIP	.480***	.108	.110	.545***	.189**	.193**
IO		.292***	.294***		.307***	.31***
CR		.356***	.359***		.313***	.314***
<i>Interactions</i>						
CRIP $\times$ IO			.146*			-.020
CRIP $\times$ CR			-.222**			-.032
R <sup>2</sup>	.231	.424	.458	.297	.474	.476
Adjusted R <sup>2</sup>	.227	.416	.444	.293	.466	.463
F	62.106***	50.384***	34.279***	87.245***	61.504***	36.884***
$\Delta$ R <sup>2</sup>	.231	.194	.033	.297	.177	.002
$\Delta$ F	62.106***	34.479***	6.250**	87.245***	34.510***	.397
VIF	1	1.693–1.781	1.498–1.782	1	1.693–1.781	1.498–1.782

Notes:  $\beta$  is standardized coefficient, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

This study estimated the following equations using least squares regression to test hypotheses.

Model 1: CBRP =  $\beta_0 + \beta_1$ CRIP +  $\epsilon_1$

Model 2: CBRP =  $\beta_0 + \beta_1$ CRIP +  $\beta_2$ IO +  $\beta_3$ CR +  $\epsilon_2$

Model 3: CBRP =  $\beta_0 + \beta_1$ CRIP +  $\beta_2$ IO +  $\beta_3$ CR +  $\beta_4$ CRIP  $\times$  IO +  $\beta_5$ CRIP  $\times$  CR +  $\epsilon_3$

NFI = .891; RMR = .052, and RESEA = .076). The model showed that the CRM relational information process not only had a direct effect on interaction orientation and CRM readiness ( $\beta = .745$ ,  $p < .001$ ;  $\beta = .789$ ,  $p < .001$ ), but also had an indirect effect on customer-based relational performance via both interaction orientation ( $\beta = .474$ ,  $p < .001$ ) and also via CRM readiness ( $\beta = .617$ ,  $p < .001$ ). However, CRM relational information processes showed no direct or indirect effects on customer-based profit performance. Lastly, customer-based relational performance was found to have a strong relationship with profit performance ( $\beta = .988$ ,  $p < .01$ ), indicating that interaction orientation and CRM readiness serve a mediating role between the relationship of CRM relational information process and customer-based relational performance; and the effect will move forward on profit performance.

## 6. Conclusions and suggestions

### 6.1. Discussion

The results of original model indicated that CRM relational information processes directly affect customer-based relational performance and that customer-based relational performance directly affects customer-based profit performance. Through the gathering, sifting, and analyzing of information regarding customers, firms can gain knowledge about the characteristics and behavior of every customer. Then, based on knowledge of the customers, firms can develop customized actions oriented toward customers to meet the requirements of each customer on an individual basis. Therefore, well-collaborated CRM relational information processes facilitate an increase in customer satisfaction levels and positive WOM. Favorable customer satisfaction raises the level of return to extend and increase the amount of purchases, and the positive WOM attracts more new customers. The

**Table 5**  
Summary of hypotheses testing.

Hypothesis	Paths	Standard coefficients	Results
H1	CRIP $\rightarrow$ CBRP	.652***	Supported
H2	CRIP $\rightarrow$ CBPP	.013	Not supported
H3	CBRP $\rightarrow$ CBPP	.929***	Supported
H4a	CRIP $\times$ IO $\rightarrow$ CBRP	.146*	Supported
H4b	CRIP $\times$ IO $\rightarrow$ CBPP	-.020	Not supported
H5a	CRIP $\times$ CR $\rightarrow$ CBRP	-.222**	Not supported
H5b	CRIP $\times$ CR $\rightarrow$ CBPP	-.032	Not supported

Notes: \*\* $p < .01$ ; \*\*\* $p < .001$ .

promotion of the value of customers therefore increases both the sales and profits of firms.

However, the study also found that CRM relational information processes do not directly affect customer-based profit performance. This result does not seem to correspond with the research of Jayachandran et al. (2005), who investigated the association between relational information processes and customer relationship performance [22]. This may be because of the concept of customer relationship performance in their study only explored customer satisfaction and retention. However, the definition of customer relationship performance in this study was more extensive. Not only was customer-based relational performance, which consists of customer satisfaction and WOM, being investigated, but also customer-based profit performance was considered. Additionally, the above results mean that CRM relational information processes must, through their influence on customer-based relationship performance, also affect customer-based profit performance.

CRM relational information processes stress the collection and application of information that is obtained from customers, so they only focus on customer relationship levels. Through the operation of CRM relational information processes, the most direct influence on firms first stems from customer feelings and then from the firms' relationships with their customers. In other words, the more smoothly CRM relational information processes are, the more customer-based relation performance is promoted. Therefore, the levels of quality of CRM relational information processes are not so directly translated into financial outcome. After building favorable customer relationships, firms can retain more original customers, acquire more new customers and increase customer value and then realize the effects in profit performance. Therefore, CRM relational information processes must pass through the mediating mechanism of relation-related performance that ultimately influences financially-related performance.

In regards to the two moderators, interaction orientation and CRM readiness, firstly, the effects of interaction orientation were partially significant in the hypothesis testing, showing that they had moderating effects on the influence of CRM relational information processes on customer-based relational performance, but had no moderating effects on the influence of CRM relational information processes on customer-based profit performance. The adoption of interaction orientation with regard to information management could potentially foster the process of CRM information reciprocity, capture, integration, access and also make its use more easy and efficient. Further, through an understanding of customers that corresponds to their preferences, firms can establish favorable relationships with their customers. Retaining favorable

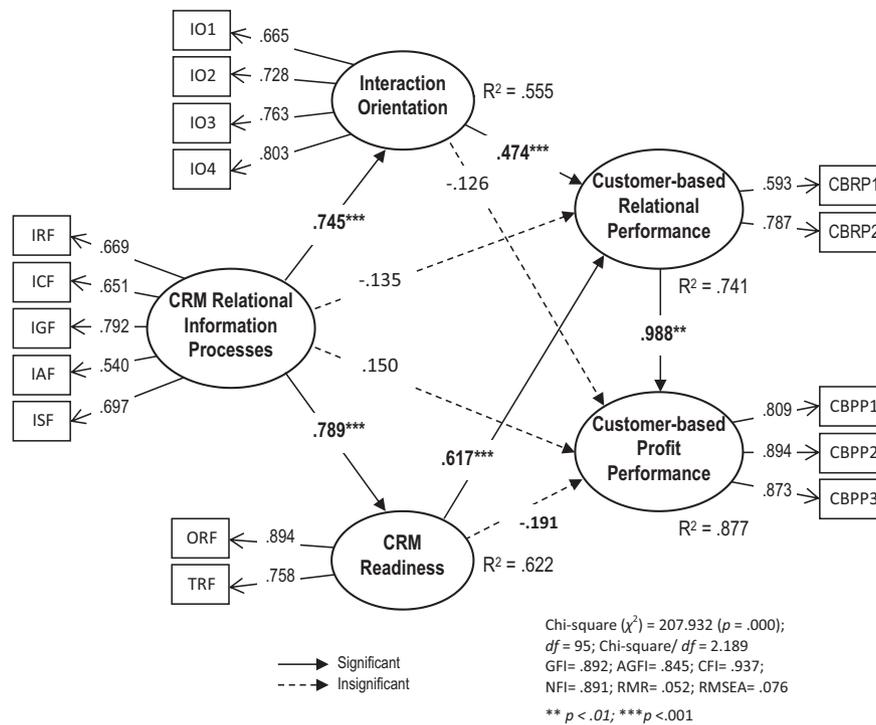


Fig. 3. Results of structural equation modeling (alternative model).

relationships can be transformed into higher levels of customer satisfaction and positive WOM.

The alternative model had similar results that interaction orientation demonstrated a mediating effect only on the relationship between CRM relational information processes and customer-based relational performance. The result further revealed that the firms' capability with regard to CRM relational information processes has a direct relationship with these firms implementing interaction orientation strategies designed for interacting with customers. Firms require customer information to design marketing campaigns intended to promote products or services, and interaction orientation plays a critical role with regard to consolidating customer information. The more detailed the need is for customer segmentation, the more information is required, and the more interactions are needed with customers. This relationship ultimately can facilitate customer-based relationship performance, and consequently can also enhance profit performance.

Secondly, the two moderating effects of CRM readiness were not supported in the hypothesis testing. However, the analysis revealed an irrational result indicating that there was a significant but negative effect on the relationship between CRM relational information processes and relational performance. In order to further examine the alternative model, CRM readiness played a mediating role in the relationship between CRM relational information processes and customer-based relational performance. Under this circumstance, it can be better explained that the capability of the information process (i.e., information reciprocity, capture, integration, access, and use) is related to a firm's CRM readiness. A higher level of capability with regard to the CRM relational information process indicates that a firm's CRM system is adequately capable of handling customer information; the staff is well trained, and that internal communication systems and technology are in good order and are connected in such a way as to support the entire CRM information process. Thus, CRM readiness can facilitate customer-based relational performance, and consequently can also increase profit performance for the firm.

In short, CRM relational information processes have a direct effect on customer-based relational performance in the original model, but have

no direct effect in the alternative model. However, the information processes exhibit an indirect effect on relational performance via interaction orientation and CRM readiness in the alternative model. Furthermore, the information processes revealed no direct effect on customer-based profit performance in either the original or the alternative model. However, customer-based profit performance could only be enhanced by going through relational performance in the case of both models.

### 6.2. Theoretical implications

More exact criteria were adopted in this study than has been the case in the past in order to evaluate CRM performance. In the past, most research has employed financial indexes to measure CRM performance [26]; however financial outcomes cannot entirely reflect customer attitudes and behavior. Therefore, in order to actually explore customer value, customer-based performance, which is customer-centric, was adopted in this study. Further, it was found in this study that CRM relational information processes first affect customer-based relational performance and then influence customer-based profit performance. Past research has only investigated the influencing factors on the general performance of CRM (e.g., [4,23]); however, this study further divided the performance dimensions and showed that the completeness of CRM relational information processes must, through customer satisfaction and WOM, affect final profit performance. Therefore, CRM performance measures in this study were more comprehensive with regard to presenting customer value and more precisely pointing out the path of the quality of a CRM information system's influence on performance.

The moderating role of interaction orientation and CRM readiness on the influence of the level of completeness of CRM relational information processes on customer-based performance, which have not been considered in previous research [17,22], were investigated in this study. The study indicated that interaction orientation not only played a moderating role, but also a mediating role in the alternative model. This implies that interaction orientation plays a critical role in CRM activities with regard to supporting information processes such as reciprocity,

capture, integration, access and use of information at the individual level; thus, firms can provide customized products or services according to the needs and preferences of customers more easily. Fulfilling the requirements of customers improves both customer satisfaction and WOM.

Although the hypotheses testing indicated that CRM readiness has no moderating effect on the relationship between CRM relational information processes and customer-based performance, it was shown to play a mediating role in the alternative model. The study indicated that a firm's CRM readiness can be reflected by firm capability related to handling customer information. This implies CRM readiness can be considered important in CRM activities. If the degree of firm CRM readiness is low, the firm may not handle customer information effectively, and this will result in lower customer satisfaction and negative WOM. Therefore, the role of interaction orientation and CRM readiness exist in the relationship between CRM relational information processes and customer-based relational performance.

### 6.3. Managerial implications

There are several implications for managers. The study showed that well-built information processes strengthen customer-based relational performance. Therefore, firms should develop information processes systemically to make firm collection, analysis, and use of customer information more precise. According to customer information that includes buying history, personal preferences, and other personal history, firms can offer customized products/services for each customer. In addition, firms can distribute resources adequately to profitable customers and reduce marketing costs spent on those that are unprofitable. Through CRM relational information processes, firms can establish customer value management and then use resources more effectively and efficiently.

In addition, managers should thoroughly strengthen customer-based relational performance in order to promote customer-based profit performance. When customers are satisfied with firm products/services, they tend to spread good WOM and further maintain long term relationships with firms. As a result of having a quality relationship with customers, firms can segment their customers efficiently as well. Market segmentation can identify both profitable and unprofitable customers. As different value driven from customers, firms can customize and personalize marketing activities and then can exploit the full value of each customer so as to promote their profit performance.

Because interaction orientation and CRM readiness are the critical elements in CRM activities, firstly, managers should pay more attention to designing varied interaction strategies for different activities in order to keep in touch with potential customers. When customers consider these interactions to be interesting, they will have a higher degree of willingness to maintain a connection with these firms. Secondly, firms should continuously maintain and keep their CRM system up to date. Because technology evolves rapidly, firm employees should be well trained with regard to new technological skills and techniques, such as mobile network marketing, in order to attract both new and potential customers in the mobile networking era.

### 6.4. Limitations and suggestions for future research

Firstly, most of the respondents of the study were members of the staff or supervisors. Fundamental employees are simply users of the CRM system and regard it as a tool. However, in middle management and above, CRM is considered throughout the value chain in order to understand and deliver customer value. Hence, in order to obtain more complete information, future research sample respondents should include middle and senior management.

Secondly, most interviewees were working in the front office. Future research about CRM topics should be done in such a way as to include interviews with employees behind the scenes. The front office usually

accounts for data collection, and the back office is responsible for analyzing data and transforming it into useful information. Therefore, a combined two-sided viewpoint from both the front office and supporting staff could potentially provide more comprehensive insights into customer relationships with management.

Finally, the samples for this research were taken from service industries. Future research could further investigate the effect of this framework in other industries or possibly explore the differences in this framework within various industries.

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