



# Effects of e-CRM on customer–bank relationship quality and outcomes: The case of Thailand

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## ABSTRACT

This research examines and measures the outcomes of electronic customer relationship management (e-CRM) system implementation in the Thai banking industry from customers' perspectives.

Because most e-CRM implementations cannot be directly seen or recognised by customers, a literature review and interviews with experts in the Thai banking industry were used to develop a new construct called 'customer-based service attributes' to measure e-CRM outcomes from customers' perspectives. A full-scale field survey of 684 customers of Thai commercial banks was then conducted. A service attribute model and a model that combined relationship quality and outcome were constructed, and their validity and reliability was confirmed. Analysis of the results by using structural equation modelling (SEM) illustrated that e-CRM implementation has a statistically significant positive relationship with customer-based service attributes and with the quality and outcome of customer–bank relationships as well as an indirect effect on relationship quality and outcome through customer-based service attributes.

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## 1. Introduction

When an organisation begins to migrate from a human-intensive organisation to one that emphasises multiple electronic contact points such as phone, fax, e-mail, and the Web, the ability to develop, manage, and measure customer relationships increases dramatically. Consequently, businesses have moved from off-line customer relationship management (CRM) to electronic channels. This approach is commonly called 'e-CRM'.

Creating long-term relationships with valued customers is usually viewed as the key to profitability in an increasingly dynamic market. e-CRM is one of the primary strategic initiatives in industry today. It has become the major paradigm of relationship marketing in the e-world ([Chen & Chen, 2004](#)).

## 2. Theoretical background

### 2.1. Exploring CRM and e-CRM

Although CRM has become widely recognised, it has no universally accepted definition. The definition and context of CRM as presented in prominent previous research is shown in [Table 1](#).

More recently, [Bradshaw and Brash \(2001\)](#) found that companies have become more efficient in developing marketing relationships that use Internet technology. Further, [Feinberg and Kadam \(2002\)](#) said that the use of the Internet as a channel for

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**Table 1**

CRM definition and context.

Researcher	Definition and context of CRM
Khalifa and Shen (2005), Barnes (2001), Brown (2000), Foss and Stone (2001), Greenberg (2001), McKenzie (2001)	Interaction between customers who are more well-informed, more demanding, and require more attention and companies that are more customer-focused and more interested in building closer and longer-term relationships with their customers and having more interaction with them
Swift (2001)	An enterprise approach to understanding and influencing customer behaviour through meaningful communications in order to improve customer acquisition, customer retention, customer loyalty, and customer profitability
Parvatiyar and Sheth (2001)	A comprehensive strategy and process of acquisition of, retention of, and partnership with selective customers to create superior value for companies and their customers
Anton and Hoeck (2002), Chalmers (2006)	A customer-focused business strategy
Dyche (2001)	Infrastructure that enables the delineation of increase in customer value and the correct means by which to motivate valuable customers to remain loyal
Ryals and Payne (2001)	An approach in which businesses market their products and services through relationships and interactions with multiple markets, most notably the customer market, often taking advantage of information technology (IT)-based interactivity
Lindgreen and Antioch (2005)	A strategy that rests on the five-pillar approach: The five basic issues that are to be tackled and managed by companies wanting to implement relationships with their clients are segmentation, information networking, algorithms, IT systems, and sales and client support.
Parvatiyar and Sheth (2001), Kincaid (2003)	The strategic use of information, processes, technology, and people
Sin, Tse, and Yim (2005)	An approach that creates a competitive edge for an organisation and that also has a positive impact on organisational performance
Jackson (1985)	Marketing that is oriented toward strong, lasting relationships with individual accounts
Payne (2000)	The creation, development, and enhancement of individualised customer relationships with carefully targeted customers and customer groups that maximise their total customer lifetime value
Kotler and Armstrong (2004)	The overall process of building and maintaining profitable customer relationships by delivering superior customer value and satisfaction
Anton and Hoeck (2002)	The strategy that provides the seamless integration of different activities for anticipating, understanding, and meeting customer needs
Sheng (2002)	An approach with the main objectives of acquiring and retaining customers, leading to bottom-line financial benefits

commerce and information presents an opportunity for businesses to use the Internet as a platform for the delivery of CRM functions on the Web (e-CRM).

A review of the relevant e-CRM literature shows that various researchers have defined e-CRM according to different aspects. The summary of e-CRM characteristics is shown in Table 2.

Therefore, e-CRM has frequently been defined as an integral part of online distribution and marketing that expands the traditional CRM techniques by integrating technologies of new electronic channels, such as Web, wireless, and voice technologies, and combining them with e-business applications into the overall CRM strategy of an enterprise.

In addition, Dyche (2001) suggested that there are two main types of e-CRM: operational e-CRM and analytical e-CRM. Operational e-CRM is concerned with the customer touch-points—in other words, all methods of customer contact, including in-person, Web-based, e-mail, telephone, direct sales, and fax. Analytical e-CRM focuses on using technology to process and make

**Table 2**

Characteristics of e-CRM.

E-CRM characteristics	
<ul style="list-style-type: none"> <li>• Part of CRM</li> <li>• Enhances CRM</li> <li>• Technology-facilitated</li> <li>• Uses electronic channels</li> <li>• Uses digital channels</li> <li>• e-business context</li> <li>• Network touch-point</li> <li>• Internet</li> <li>• Web</li> <li>• Mobile</li> <li>• Wireless</li> <li>• TV</li> <li>• e-mail</li> <li>• Interaction chat</li> <li>• e-forum</li> <li>• VOIP</li> </ul>	<ul style="list-style-type: none"> <li>• PDA</li> <li>• Interaction</li> <li>• Online marketing</li> <li>• Multi-channel communication</li> <li>• Process automation</li> <li>• Data derived from Internet</li> <li>• Customise</li> <li>• Sales</li> <li>• Marketing</li> <li>• Service</li> <li>• e-messaging</li> <li>• Intelligent search engine</li> <li>• Call me button</li> <li>• Data mining</li> <li>• Online purchase</li> </ul>

sense of large amounts of customer data. Meanwhile, Kraft (2000) noted that integration between CRM systems and their legacy systems is very common and that the integration of all channels across all areas in the company is critical to a company's success. Because of the significant role of operational e-CRM, Anon (2002) and Kennedy (2006) tried to expand it to include other electronic technologies and channels, such as mobile telephones, customer contact centres, and voice response systems that allow companies to manage customer interactions with either no human contact at all or with reduced levels of human interaction. The present research is based on these previous studies.

## 2.2. CRM in the service industries

Many articles have considered how services differ from products in terms of qualities such as intangibility, perishability, simultaneity, and interactivity (Sheng, 2002). In the service context, interpersonal relationships are considered a key element of what is offered (Berry, 1995; Czepiel, 1990). Research has shown that establishing relationships between customers and service providers has a positive impact on customer-to-firm relationships (Guenzi & Pelloni, 2004). Therefore, service providers have evolved around the maintenance of close relationships with customers (Wetzels, Ruyter, & Birgelen, 1998).

For service industries, such as banking, relationship marketing is an important way of creating more efficient and effective relationships with demanding customers in order to gain more business benefits (Chadwick, McHardy, & Wiesenhofer, 2002; Colgate & Alexander, 1998; Colgate & Stewart, 1998; Shenwell & Yavas, 1998; Tapscott, Ticoll, & Lowy, 2000). Therefore, to maximise profits, the banks will need to shift their business models from product-centric to a customer-centric ones (Singh, Chhatwal, Yahyabhoj, & Yeo, 2002).

Singh's research in 2002 on innovation in e-banking showed that e-CRM represents a paradigm shift in banking. In addition, Lemon and Rust (2001) found that banks' customers expected personalisation to be truly understood by their banks and also mentioned that for the banking sector, e-CRM involved enterprise-wide reprocessing and deployment across multiple channels as well as consistency and collaboration across all channels throughout the firm.

## 2.3. Measurement of E-CRM customer benefits

The advantages of an institution's application of an e-CRM approach to its service interaction marketing include quick service/response time, two-way interaction service relationships, and the ability to provide service for customers from anywhere at any time (Lai, Hsiao, Yang, Huang, & Lee, 2009; Pan & Lee, 2003).

However, few studies have researched CRM/e-CRM outcomes from the customer's point of view. Pan (2005) considered CRM from three perspectives: the technology perspective, business perspective, and customer perspective. To examine the customer perspective, content analysis was applied to focus-group data; the explicit concept was identified; and four main characteristics of an effective CRM were described: (1) Delivery of the right product and service at the right time through the right channel, (2) Multiple value-adding customer interaction points with the organisation, (3) Channels for customers to provide feedback that is valued by the organisation and used to produce personalised and customisable product and services, and (4) Establishment of customer trust in CRM systems.

Kiniloğlu and Zarali (2008) used the balanced scorecard to create a measurement tool for e-CRM implementation; in their research, the constructs of customer perspective were improved customer awareness and perceptions, increased value and frequency of transactions, and satisfaction and loyalty of online customers. Moreover, their research referred to Kim, Suh, and Hwang (2003), who constructed the customer-centric evaluation of CRM into (1) customer lifetime value and loyalty; (2) customer satisfaction, retention, and acquisition; (3) customer reaction; and (4) customer knowledge, profiling, and understanding.

Once a business has implemented e-CRM, that business expects its greatest gains from e-CRM implementation to be in the areas of customer relationship quality and relationship outcome.

## 2.4. Relationship quality and relationship outcomes

Jarvelin and Lehtinen (1996) described relationship quality as a customer's perceptions of how well his or her expectations, predictions, goals, and desires concerning the whole relationship are fulfilled; this definition was applied in Roloff and Miller (1987), Zeithaml (1981) and Crosby, Evans, and Cowles (1990). Hennig-Thurau and Klee (1997) mentioned that relationship quality could be recognised as the level of adequate fulfilment of the needs of the customer associated with the relationship. Consequently, it forms the overall impression that a customer has concerning the complete relationship that he or she has with a business, including different transactions (Wong & Sohal, 2002).

Relationship quality comprises several key components that reflect the overall nature of relationships between firms and their customers (Hennig-Thurau, Gwinner, & Gremler, 2002). The major constructs of relationship quality, drawn from major studies on relationship quality, are identified in Table 3 (the details are shown in Appendix A).

Thus, the three constructs that have been the most frequently identified are trust, satisfaction, and commitment.

### 2.4.1. Trust

Trust is one of the most widely examined and accepted concepts in relationship marketing (e.g. Dwyer, Schurr, & Oh, 1987; Mohr & Spekman, 1994), and it has been shown to have an effect on the development of business relationships (Anderson & Weitz, 1992).

**Table 3**  
Summarised components of relationship quality.

Relationship quality components
<ul style="list-style-type: none"> <li>• Trust</li> <li>• Satisfaction</li> <li>• Commitment</li> <li>• Communication</li> <li>• Conflict</li> <li>• Opportunism</li> <li>• Cooperation</li> <li>• Understanding</li> <li>• Customer power</li> <li>• Coordination</li> <li>• Bonds</li> <li>• Goal congruence</li> <li>• Adaptation</li> </ul>

Trust was found to have an influence on relationship stability and overall relationship quality (Anderson & Weitz, 1992; Wong & Sohal, 2002). Dwyer et al. (1987) mentioned that trust is important in the development of high-quality relationships, as did Grönroos, 1990.

#### 2.4.2. Customer satisfaction

Customer satisfaction has been widely accepted among researchers as a strong predictor for behavioural variables (Liljander & Strandvik, 1995; Raval & Grönroos, 1996). Customers are generally not equally satisfied with all of their qualified vendors (Dorsch, Swanson, & Kelley, 1998).

Satisfaction in a relationship is centred on the roles assumed and performed by the individual parties (Crosby et al., 1990; Murstein, Cerreto, & MacDonald, 1977). Storbacka, Strandvik, and Grönroos (1994) defined customer satisfaction as a customer's cognitive and affective evaluation based on his or her personal experiences across all service episodes within the relationship.

#### 2.4.3. Commitment

The concept of commitment plays a central role in the literature on relationship marketing, and it is a major characteristic of relationship marketing models (Scanzoni, 1979).

Commitment is essential for the development of successful relationship exchanges (Gundlack, Achrol, & Mentzer, 1995), and it represents the highest level of relationship bonding (Dorsch et al., 1998; Dwyer et al., 1987). Morgan and Hunt (1994) identified commitment as another key mediating variable of relationship marketing. Commitments by both parties are powerful indicators of the quality of the relationship (Gundlack et al., 1995). It also involves an intention to maintain a valued relationship in the future (Dorsch et al., 1998; Moorman, Zaltman, & Deshpande, 1992). Furthermore, research suggests that exchange partners are more committed to the relationship when they exhibit stronger intentions to develop and maintain the relationship (Anderson & Weitz, 1992; Dorsch et al., 1998; Gundlack et al., 1995).

#### 2.4.4. Relationship outcomes

In a 2002 study, Thorsten Hennig-Thurau, who is a famous researcher in the field of relationship marketing, attempted to identify and understand how managerially controlled variables influence important relationship marketing outcomes. This research examined the relationship of these variables to customer loyalty and word-of-mouth communication and interpreted customer satisfaction and commitment as mediators.

Leverin and Liljander (2006) studied the effects of relationship marketing activities on relationship outcomes. They considered two desirable relationship outcomes: customer satisfaction and loyalty. Hennig-Thurau and Klee (1997) suggested that besides affecting satisfaction and overall quality perception, the customer's evaluation of his or her relationship with the company impacts customer retention and must be considered.

The most common components of relationship outcomes found in previous studies are customer loyalty, customer retention, and willingness to recommend.

#### 2.5. Customer-based service attributes

Previous studies and interviews with experts also indicate that there is a large gap between e-CRM implementation and outcomes and that there must therefore be something to link them. A further survey of the literature identified 'customer-based service attributes' as a linking construct.

Customer-based service attributes are defined in this research as CRM and (in cases with IT application support) e-CRM services activities; in other words, as CRM/e-CRM outcomes in the service industry from the customer's perspective. By using information from experts and previous studies, the following list was compiled on the constructs of customer-based service activities and related e-CRM outcomes (Table 4).

**Table 4**

Customer-based service attributes' constructs.

Constructs	Reference
Interaction opportunities with the bank	Kos, Sockel, and Falk (2001), Peppard (2000), Wilson, Elizabeth, and Malcolm (2002)
Provision of accurate information	Jutla, Craig, and Bodorik (2001), Kos et al. (2001), Pan and Lee (2003)
Provision of relevant information	Jutla et al. (2001), Kos et al. (2001), Pan and Lee (2003)
Provision of responsive information	Jutla et al. (2001), Kos et al. (2001), Pan and Lee (2003)
Timely access to accurate information	Anton (1996), O'Halloran (2003)
Complete customer information	Goodhue, Wixom, and Watson (2002), Kos et al. (2001)
Personalised information and service	Nykamp (2001), Peppers and Rogers (1993)
Provision of data consistency	Goodhue et al. (2002), Peppard (2000)
Provision of up-to-date information	Kim et al. (2003), Peppard (2000)
Contact anytime	Boonajsevee (2005)
Contact anywhere	Boonajsevee (2005)
One-stop service	Experts
Provision of purchase conditions information	Feinberg and Kadam (2002)

## 2.6. Contributions of this study

To date, most CRM and e-CRM research have identified the objectives and benefits of e-CRM implementation from a business perspective, with a focus on factors such as customer acquisition (e.g. Max, 2004; Sheng, 2002), customer retention (e.g. Fjermestad & Romano, 2003; Foss & Stone, 2001; Swift, 2001), financial benefits (e.g. Max, 2004; Scullin & Fjermestad, 2004; Sheng, 2002), customer loyalty (e.g. Fjermestad & Romano, 2003; Max, 2004; Swift, 2001), and cross-selling (e.g. Foss & Stone, 2001; Scullin & Fjermestad, 2004) from the business, rather than from the customer, perspective. Kim and Kim (2007) measured CRM from the customer perspective as part of a CRM scorecard based on satisfaction and loyalty, but relatively little research has been done on the outcomes of CRM or e-CRM from the customer's point of view. Moreover, most of the research in this area was conducted by using a qualitative approach (case studies and interviews).

Generally, researchers of e-CRM, such as Crosby et al. (1990), Dwyer et al. (1987), Hennig-Thurau and Klee (1997), Hennig-Thurau et al. (2002), Lang and Colgate (2003), Kim, Lee, and Yoo (2006), have studied either how relationship quality or how relationship outcomes are beneficial to firms. A review of the key literature shows that only Hennig-Thurau et al. (2002) and Kim et al. (2006) studied relationship quality and relationship outcome in the same research. Both considered relationship quality as a mediating construct on relationship outcome. Relationship quality and relationship outcome were considered separate entities.

Moreover, only a few studies in the area of customer relationships, such as those by Hennig-Thurau et al. (2002) and Lindgreen and Antiocho (2005), were concerned with service industries; most related research has focused on the manufacturing or retailing industries.

On the basis of the literature review, it is found that there is

- (1) a lack of research that measures outcomes of e-CRM from the customer perspectives,
- (2) a lack of research that applies both qualitative and quantitative statistical approaches to summarise results,
- (3) a lack of research that shows that relationship quality and relationship outcome cannot be analysed separately, and
- (4) a lack of research that studies e-CRM in the service industries.

This study attempts to fill these gaps.

## 2.7. Context of this study

The main context of this study is the Thai commercial banking industry. According to a 2009 Bank of Thailand (BOT) report, there are 14 Thai commercial banks separated into three groups—large, medium, and small—according to asset criteria. This research is concerned only with the large and medium banks. Most of the small banks were previously financial securities companies, and their main business differs from that of large and medium commercial banks in several respects. For example, as compared to large and medium commercial banks, small banks may have different lending policies; they may provide only a limited selection of bank products; they have different target customers; and they do not currently implement e-CRM (Table 5).

The following section presents the present study's research questions and framework on the basis of the literature review and context of the study.

## 3. Research questions and hypotheses

The literature review shows that most of the academic research on CRM/e-CRM has concerned benefits for the organisations involved. In contrast, this research focuses on the e-CRM benefits that customers can recognise. Based on this alternate focus, the research questions are as follows:

- RQ1: How can customers perceive the benefits that they get from their banks' CRM/e-CRM implementation?
- RQ2: What differences can customers perceive between banks that have implemented e-CRM and those that have not?
- RQ3: Does e-CRM have a positive or negative effect on the quality and outcome of customer–bank relationships?

**Table 5**

List of Thai commercial banks (as of 2008–2009).

Large	Medium	Small
<ul style="list-style-type: none"> <li>• Bangkok Bank (BBL)</li> <li>• Krung Thai Bank (KTB)</li> <li>• Siam Commercial Bank (SCB)</li> <li>• Kasikorn Bank (KBANK)</li> </ul>	<ul style="list-style-type: none"> <li>• Bank of Ayudhya (BAY)</li> <li>• TMB Bank (TMB)</li> <li>• Siam City Bank (SCIB)</li> <li>• Thanachart Bank (TBANK)</li> </ul>	<ul style="list-style-type: none"> <li>• United Overseas Bank (Thai)</li> <li>• Standard Chartered Bank (Thai)</li> <li>• CIMBThai</li> <li>• Tisco Bank</li> <li>• Kiatnakin Bank</li> <li>• ACL Bank</li> </ul>

Source: Bank of Thailand (2009).

According to the research framework created here, three main hypotheses were developed.

**H1.** E-CRM implementation has a significantly positive relationship with customer-based service attributes.

**H1a.** E-CRM implementation has a significantly positive relationship with information received by the customer.

**H1b.** E-CRM implementation has a significantly positive relationship with customer convenience.

**H1c.** E-CRM implementation has a significantly positive relationship with customer communication channels.

**H2.** E-CRM implementation has a significantly positive relationship with the quality and outcome of customer–bank relationships.

**H2a.** E-CRM implementation has a significantly positive relationship with the overall quality of customer–bank relationships.

**H2b.** E-CRM implementation has a significantly positive relationship with customer trust.

**H2c.** E-CRM implementation has a significantly positive relationship with customer satisfaction.

**H2d.** E-CRM implementation has a significantly positive relationship with customer commitment.

**H2e.** E-CRM implementation has a significantly positive relationship with customer loyalty.

**H2f.** E-CRM implementation has a significantly positive relationship with customer retention.

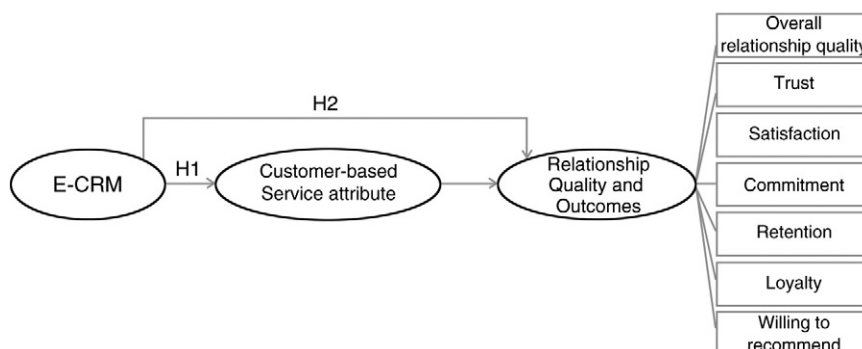
**H2g.** E-CRM implementation has a significantly positive relationship with customer willingness to recommend.

**H3.** E-CRM implementation has an indirect effect on relationship quality and outcome through customer-based service attributes.

The research framework was set up as follows below (Fig. 1).

#### 4. Methodology

The research approach of the study is inductive and empirically based. A three-pronged approach consisting of a literature review, interviews, and field surveys was applied to answer the research questions.



**Fig. 1.** The research framework.



#### 4.1. Qualitative method

As the e-CRM issues are not well known in the Thai banking industry, exploratory qualitative work is a useful and necessary step toward gaining a better understanding. The qualitative work of this study was conducted in two stages.

First, the literature was reviewed to clarify e-CRM definitions, Thai commercial bank information, and e-CRM service activities and measurement.

Second, experts were interviewed to obtain detailed viewpoints and gain a better initial understanding of problems (Healy & Perry, 2000; Maxwell, 1996; Spiggle, 1994). To collect the banks' e-CRM implementation information, in-depth interviews were conducted with nine senior managers who had positions of responsibility in the CRM projects of large- and medium-sized Thai commercial banks, which were all represented.

#### 4.2. Quantitative method

Furthermore, a quantitative field survey of bank customers was conducted in two phases, first as a pilot survey and then as a full-scale survey. The pilot survey was conducted in June 2009 to test the questionnaire's reliability and explore the constructs of customer-based service attributes.

To answer the research questions and test hypotheses, a full survey was conducted to collect data from bank customers in Thailand from August to October 2009. Sample selection was based on the stratified sampling technique. Banks were separated into strata after in-depth interviews with executive of several banks on the basis of the different e-CRM features that they implemented. Random sampling was then used to select a sufficient number of subjects from each stratum proportional to the number of accounts in each stratum.

The questionnaire consisted of four parts: (1) respondent's personal information, (2) his or her financial service behaviour, (3) customer-based service attributes with regard to the respondent's main bank, and (4) relationship quality and outcome.

The customer-based service attributes were measured by using customers' subjective assessments of their main banks. A customer's responses were based on his or her main bank only, and the definition of 'main bank' was clearly presented in the questionnaire.

Thirteen items were included in the questionnaire to collect information on e-CRM outcomes that customers were able to recognise. The questionnaire used a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5) to reflect the main characteristics of the outcomes.

To avoid response bias, for example, 'morally right' answers, in the measurement of dependent variables (relationship quality and outcome), a two-stage Likert scale was applied in the main part of the questionnaire, as was done in Albaum's (1997) study. The first stage asked for the direction of feeling (positive, neutral, or negative) and the second asked for the strength of feeling in response to the factor (strongly, or not so), and this scale was converted to a 7-point Likert scale before the analysis process.

The items in this part of the questionnaire resulted from the literature review and expert interviews. The number of items in each construct was as follows: overall relationship quality, 7 items; trust, 3 items; satisfaction, 8 items; commitment, 6 items; retention, 2 items; loyalty, 2 items; and willingness to recommend, 2 items.

All the items were cross-validated by expert confirmation before they were added to the questionnaire, and the understanding of respondents was tested (pre-pilot) before the field survey was deployed, to increase the reliability of responses.

**Table 6**  
e-CRM concepts from the literature and interviews.

	Literature	Interview
CRM concept embedded	/	/
Customise	/	/
Technology	/	/
Interaction	/	/
Sales	/	/
Service	/	/
Marketing	/	/
Electronic channel	/	/
Network touch point	/	/
Internet/Web	/	/
Mobile	/	/
e-mail	/	/
Chat	/	/
ATM		/
IVR		/
Online-teller		/
Telesales		/
Online purchase	/	
e-business context	/	
e-banking context		/

## 5. Data analysis and results

### 5.1. Qualitative results: Definition and stratum

The main concepts and applications of e-CRM collected from the literature reviews and expert interviews are shown in Table 6.

Although there were some differences between the literature and the interviewed experts' opinions in regard to the touch-points, the different sources agreed that the Internet/Web and mobile telephones should be included in the list of electronic touch-points. However, some channels described in the literature, such as e-mail, online chat, and online purchasing, were not applicable to banking in Thailand. Because the context of this research was Thai banking, Thai bank senior managers concluded that the only relevant electronic channels that existed in Thai banks were automated teller machines (ATMs), cash deposit machines (CDMs), interactive voice response (IVR), online tellers (bank tellers connected to the CRM system), and telesales.

#### 5.1.1. Definition of e-CRM in this study

Based on the literature review and expert interviews, e-CRM in this research has been defined as the technological element of CRM that customers can recognise and acknowledge through their relationships with their banks. This research covers both analytical and operational e-CRM.

Normally, customers are unaware of the internal business processes of their banks, so they generally only use operational criteria, especially the communication channels that banks use to interact with their customers, to separate banks into groups. The communication channels that are implemented, such as teller systems or telebanking, are indirect touch-points. The banks' e-CRM implementation according to the interviews is shown in Table 7.

Furthermore, the interviews indicated that the Thai commercial banks vary in terms of customer strategies. One of the large banks was cut off from the study because it is a state enterprise.

Therefore, the research divided Thai commercial banks into two groups according to their implementation of e-CRM communication channels, which are the only points of customer interaction with e-CRM.

- 1) The e-CRM group comprised banks that had communication channels that enabled customers to recognise e-CRM: Banks L2, M1, and M3.
- 2) The CRM group comprised banks that did not have communication channels that allowed customers to recognise e-CRM: Banks L1, L3, M2, and M4

Additionally, the literature review and interviews indicated that customer-based service attributes could also provide a link between e-CRM implementation and customer recognition.

### 5.2. Quantitative results: Field survey

#### 5.2.1. Pilot survey and exploratory factor analysis

Since customer-based service attributes were newly developed, an exploratory factor analysis (EFA) was conducted by applying a factor analysis using principal component extraction and varimax rotation. The pilot survey was conducted in June 2009 to collect data for the EFA and verify the measurement. Questionnaires were handed to 120 customers of Thai commercial banks, and 111 valid questionnaires were collected directly from the respondents (92.5% response rate).

EFA results showed that the Kaiser–Meyer–Olkin (KMO) measure was 0.867, and the Bartlett's test was statistically significant, indicating that the data was appropriate for application of the factor analysis technique. Table 8 shows the 13 items of customer-based service attributes organised into three different factor groups according to factor scores, which were all statistically significant at the 0.01 level. Moreover, Cronbach's alpha of each construct was calculated to check the instrument's reliability, and these values are shown in Table 8.

The criteria that each construct be composed of the highest factor-loading items, with scores greater than 0.3 and communality greater than 0.5, without cross-loading, were validated and maintained in this stage.

The results from EFA identified three factors of customer-based service attributes:

- 1) Information: composed of 6 items (Serv2, Serv3, Serv4, Serv5, Serv6, and Serv9); the 6 items measured 86.6% of the information construct.

**Table 7**

Banks' e-CRM implementation.

	Large banks			Medium banks			
	L1	L2	L3	M1	M2	M3	M4
Marketing automation	✓	✓	✓	✓	✓	✓	✓
Sales automation	✓	✓	✓	✓	✓	✓	✓
Service automation	✓	✓	✓	✓	✓	✓	✓
Communication channels	X	✓	X	✓	X	✓	X



**Table 8**

Factor loading and Cronbach's alpha of three factors.

Factor	Variable	Factor loading	Cronbach's alpha
Information	Serv2. Provision of accurate information	0.805	0.866
	Serv3. Provision of relevant information	0.714	
	Serv4. Provision of responsive information	0.656	
	Serv5. Timely access to accurate information	0.643	
	Serv6. Complete customer information	0.594	
	Serv9. Provision of up-to-date information	0.483	
Convenience	Serv7. Personalised information and service	0.737	0.696
	Serv8. Provision of data consistency	0.634	
	Serv12. One-stop service	0.610	
	Serv13. Provision of purchase conditions information	0.541	
Communication	Serv1. Interaction opportunities with the bank.	0.798	0.673
	Serv10. Contact anytime	0.685	
	Serv11. Contact anywhere	0.613	

2) Convenience: composed of 4 items (Serv7, Serv8, Serv12, and Serv13); the 4 items measured 69.6% of the convenience construct.

3) Communication channels: composed of 3 items (Serv1, Serv10, and Serv11); the 3 items measured 67.3% of the communication channels construct.

### 5.2.2. Relationship quality and relationship outcome

Applying the partial correlation technique with demographic data (gender, age, education, occupation, and income) set as control variables, all relationship quality and relationship outcome constructs were statistically significantly correlated at the 0.01 level, as shown in Table 9. The results indicated that relationship quality and relationship outcome were inseparable in the analysis. Therefore, in this research relationship quality and relationship outcomes were considered together.

Previous studies have indicated that the linkage between relationship quality and relationship outcome should not be totally cut off, and this result was confirmed by statistically measuring correlation. In this research, these variables were then combined into a 'relationship quality and outcome' variable that consisted of seven constructs: overall relationship quality, trust, satisfaction, commitment, loyalty, retention, and willingness to recommend. These key constructs have frequently been applied in many previous studies.

### 5.2.3. Full-scale survey

Questionnaires were handed out to 1000 bank's customers and directly collected from respondents during August to October 2009. The final valid response rate was 88%; invalid responses had incomplete answers or were from respondents whose main bank was not a Thai commercial bank such as CITibank, Government saving bank or Bank of agriculture and cooperation).

The 863 completed questionnaires included 179 from customers of a state enterprise bank that was disqualified from the study, leaving 684 cases for analysis. Of those responses, 39.5% (270 cases) were from customers of e-CRM banks, and 60.5% (414 cases) were from customers of banks without e-CRM; this split was proportional to the number of banks in each group. The demographic characteristics of the sample used in the analysis are shown in Table 10.

The survey showed that 18.4% of the respondents never accessed their main bank via electronic channels. The highest percentage (27.8%) used electronic banking 2–3 times a week. ATMs and CDMs were identified as the electronic touch-points that respondents were most familiar with.

**5.2.3.1. Construct validity/measurement model.** Before conducting the structural equation modelling (SEM), construct and scale validity were measured using two measurements:

1) A customer-based service attribute measurement model was used to confirm that the factors extracted from the EFA belonged to the designed constructs and to authenticate the construction of the factors.

**Table 9**

Correlation result between the constructs of relationship quality and relationship outcome.

	RQ	Trust	Satisfaction	Commitment	Loyalty	Retention
Trust	0.649**					
Satisfaction	0.743**	0.708**				
Commitment	0.397**	0.326**	0.447**			
Loyalty	0.476**	0.432**	0.586**	0.518**		
Retention	0.405**	0.374**	0.455**	0.405**	0.363**	
Recommend	0.567**	0.538**	0.670**	0.432**	0.548**	0.385**

Note: \*\* correlation is significant at 0.01 level.

**Table 10**

Respondents' demographic data.

Item	Measure	Frequency	Percent
Gender	Male	286	41.8
	Female	398	58.2
Age	Less than 20 yrs	14	2.0
	20–30 years	362	52.9
	31–40 years	197	28.8
	41–50 years	70	10.2
	51–60 years	32	4.7
	More than 60 yrs	9	1.3
Education	Below undergraduate	68	9.9
	Undergraduate	437	63.9
	Master's degree	173	25.3
	Doctoral degree	4	0.6
	Other	2	0.3
Occupation	Student	102	14.9
	Government staff	126	18.4
	Private company employee	377	55.1
	Self-employed	49	7.2
	Other	30	4.4
Area of residence	Bangkok	485	70.9
	Bangkok metropolitan	166	24.3
	Thailand upcountry	33	4.8
Electronic banking usage			
Frequency of use		Frequency	Percent
Never		126	18.4
Daily		21	3.1
2–3 times a week		190	27.8
Once a week		102	14.9
2–3 times a month		157	23.0
Once a month		56	8.2
Less often		32	4.7
Electronic channel usage			
Channel		Frequency	Percent
Telephone	Used	112	16.4
	Never	572	83.6
Mobile	Used	90	13.2
	Never	594	86.8
Internet	Used	264	38.6
	Never	420	61.4
ATM/CDM	Used	591	86.4
	Never	93	13.6

- 2) A relationship quality and outcome measurement model was used to confirm that the factors extracted from the literature and adjusted by the experts belonged to the designed constructs and to authenticate the construction of the factors.

In order to access the constructs' convergent validity, confirmatory factor analysis (CFA) was applied using LISREL 8.72. First, measurement models were evaluated for goodness-of-fit to indicate how well the specified models reproduced the covariance matrix among the indicator items. The general criteria for an accepted model and the values for each model tested are shown in Table 11.

Table 11 shows that both of the measurement models used in this research—the service attribute model and the relationship quality and outcome model—met all criteria of good fit. Interpretation showed that the customer-based service attributes can be

**Table 11**

Goodness-of-fit indices for the measurement models.

Value required	$\chi^2/df$	p-value	CFI	NNFI	GFI	AGFI	RMSEA
	<2.00	>0.05	>0.90	>0.90	>0.90	>0.90	<0.05
Service attribute model	1.10	0.30	1.00	1.00	0.99	0.98	0.012
RQ and RO model	1.12	0.12	1.00	1.00	0.98	0.96	0.014

Note: CFI = Comparative Fit Index, NNFI = Non-normed Fit Index, GFI = Goodness of Fit Index, AGFI = Adjusted Goodness of Fit Index, RMSEA = Root Mean Square Error of Approximation.

**Table 12**

Composite reliability and average variance extracted (AVE) of proposed measurement models.

	Factor loading	SE	R <sup>2</sup>	Composite reliability	AVE
Service attribute				0.86	0.67
Information (6 items)	0.81	0.34	0.66		
Convenience (4 items)	0.88	0.22	0.78		
Communication (3 items)	0.76	0.42	0.58		
Relationship quality and outcome				0.86	0.49
Overall RQ (7 items)	0.84	0.30	0.70		
Trust (3 items)	0.77	0.40	0.60		
Satisfaction (6 items)	0.90	0.20	0.80		
Commitment (4 items)	0.49	0.76	0.24		
Loyalty (2 items)	0.58	0.67	0.33		
Retention (1 item)	0.49	0.76	0.24		
Recommendation (2 items)	0.69	0.53	0.47		

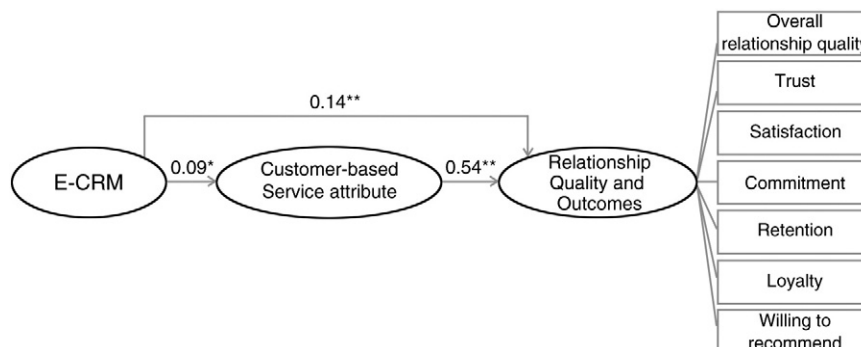
measured according to three factors—information, convenience, and communication channels—which confirmed the EFA result from the pilot survey. The results also confirmed the measurement of relationship quality and outcome by seven constructs based on the literature and correlation results: overall relationship quality, trust, satisfaction, commitment, loyalty, retention, and willingness to recommend. Both of the measurement models were valid, meaning that the measurement models supported the observed data.

Second, to measure the construct reliability of the dimensions, average variance extracted (AVE) was used. Anderson and Gerbing (1998) have recommended the AVE procedure as a way of indicating convergent reliability by representing the ratio of the total variance that is due to the latent variable. According to Hair, Black, Babin, Anderson, and Tatham (2006), AVE greater than 0.50 indicates that the validity of both the construct and the individual variables is high, meaning that more than one-half of the variances observed in the items were accounted for by their hypothesised factors. Moreover, composite reliability was issued to evaluate the reliability and convergent validity of each construct, with the interpretation of the resulting coefficient similar to that of Cronbach's alpha. The result for both measurement models was 0.86, which was well above the acceptable value. From results value in Table 12 indicated the measurement models considered reliable.

To test the specified hypotheses, SEM was used to investigate the significant paths among constructs. The model was tested by LISREL 8.72, using a covariance matrix, and the maximum likelihood estimation (MLE) procedure. According to the same criteria as that used for the CFA model fit, all statistical fit indices of these structural models indicated a good fit (chi-square = 33.01,  $df = 28$ ,  $p$ -value = 0.235, CFI = 1.00, NNFI = 1.00, GFI = 0.99, AGFI = 0.98 and RMSEA = 0.016), and the path coefficients were significant ( $t$ -scores were above 1.96;  $p \geq 0.05$ ).

**5.2.3.2. Direct effect.** The results from path analysis showed that the direct path coefficient of e-CRM implementation to customer-based service attributes was positive and significant (0.09,  $t$ -value = 2.23); thus, H1 was supported. In addition, as shown in Fig. 2, the path coefficient of e-CRM implementation to relationship quality and outcome was positive and significant (0.14,  $t$ -value = 3.55); thus, H2 was also supported.

Moreover, the path coefficients, shown in Table 13, indicated that there were statistically significant direct effects of e-CRM implementation on all of the e-CRM service attribute and relationship quality and outcome constructs.

**Fig. 2.** Path coefficient from the path analysis results.

**Table 13**

Path analysis for direct effect results.

Hypothesis	Path	R <sup>2</sup>	Coefficient	t-value	Conclusion
H1	e-CRM → service attribute		0.09*	2.23	Support
H1a	e-CRM → information	0.66	0.09*	2.23	Support
H1b	e-CRM → convenience	0.78	0.10*	2.24	Support
H1c	e-CRM → communication channels	0.58	0.10*	2.24	Support
H2	e-CRM → relationship quality and outcome		0.14**	3.55	Support
H2a	e-CRM → overall relationship quality	0.70	0.21**	3.55	Support
H2b	e-CRM → trust	0.60	0.26**	3.54	Support
H2c	e-CRM → satisfaction	0.80	0.27**	3.55	Support
H2d	e-CRM → commitment	0.24	0.13**	3.45	Support
H2e	e-CRM → loyalty	0.33	0.18**	3.49	Support
H2f	e-CRM → retention	0.24	0.19**	3.45	Support
H2g	e-CRM → willingness to recommend	0.47	0.25**	3.52	Support

Note: \* $p < 0.05$ , \*\* $p < 0.01$ .

**5.2.3.3. Indirect effect.** To test the mediating role of customer-based service attributes on the relationship path between e-CRM implementation and relationship quality and outcome, the indirect effect on customer-based service attributes was analysed. Not only was the direct effect of e-CRM implementation on relationship quality and outcome significant, but also the indirect effect of e-CRM through customer-based service attributes was significant, with a path coefficient of 0.07 and a  $t$ -value of 2.21. Therefore, H3 was supported. The conclusions of the indirect effect hypothesis testing and the indirect path coefficient are both shown in Table 14.

Moreover, this research applied SPSS 16 to compare service attributes of the banks that implemented CRM to those of the e-CRM banks. The  $t$ -test results that show the mean difference comparisons are given in Table 15.

As shown in Table 15, the mean comparisons between banks that implemented e-CRM and those that did not show six constructs that were significantly different at a significance level  $\leq 0.05$  (Serv5, Serv6, Serv7, Serv9, Serv11, and Serv12).

**Table 14**

Path analysis for indirect effect results.

Hypothesis	Path	Coefficient	t-value	Conclusion
H3	e-CRM → service attribute → relationship quality and outcome (Indirect)	0.07*	2.21	Support

Note: \* $p < 0.05$ .**Table 15**Comparison of  $t$ -test findings for significant differences in service attributes between CRM and e-CRM banks.

Construct		Mean	Sig
Serv1. Interaction opportunities with the bank	CRM	4.21	.879
	e-CRM	4.20	
Serv2. Provision of accurate information	CRM	4.02	.400
	e-CRM	3.97	
Serv3. Provision of relevant information	CRM	3.96	.799
	e-CRM	3.97	
Serv4. Provision of responsive information	CRM	3.94	.492
	e-CRM	3.90	
Serv5. Timely access to accurate information	CRM	3.77	.001**
	e-CRM	3.97	
Serv6. Complete customer information	CRM	3.74	.003**
	e-CRM	3.93	
Serv7. Personalised information and service	CRM	3.55	.009**
	e-CRM	3.72	
Serv8. Provision of consistency data	CRM	3.75	.604
	e-CRM	3.78	
Serv9. Provision of up-to-date information	CRM	3.69	.001**
	e-CRM	3.92	
Serv10. Contact anytime	CRM	3.85	.460
	e-CRM	3.79	
Serv11. Contact anywhere	CRM	3.58	.002**
	e-CRM	3.83	
Serv12. One-stop service	CRM	3.64	.001**
	e-CRM	3.91	
Serv13. Provision of purchase conditions information	CRM	3.54	.739
	e-CRM	3.57	

Note: \*\* $p < 0.01$ .

Therefore, this research study found that banks that implement e-CRM can make customers feel positive because e-CRM enables the banks to provide customers with timely access, complete, up-to-date, and personalised information; lets customers contact their banks from anywhere; and offers customers one-stop service.

## 6. Conclusions and implications

This research is among the first few studies on e-CRM that investigate the outcomes of e-CRM in the service industry from the customers' perspectives. And the empirical results of the study can answer all three of the research questions, as follows.

RQ1: How can customers perceive the benefits that they get from their banks' e-CRM implementation?

From the literature review and interviews with experts, 13 components, referred to in this study as customer-based service attributes, were found to reflect the customer's recognition of his or her main bank's e-CRM. Factor analysis results showed that these 13 components could be grouped according to 3 factors: information, convenience, and communication channels.

RQ2: What differences can customers perceive between banks that have implemented e-CRM and those that have not?

The results of *t*-tests of customer-based service attributes that compared the responses of customers of banks with and without e-CRM illustrated that there are 6 elements that e-CRM banks' customers attribute to their main banks more than customers of banks without e-CRM do. These are (1) customers have timely access to accurate information, (2) their main banks present complete customer information, (3) their main banks provide them with personalised information and service, (4) they can get up-to-date information from their main banks, (5) they can contact their main banks from anywhere, and (6) their main bank can provide them with one-stop service.

RQ3: Does e-CRM have a positive or negative effect on the quality and outcome of customer–bank relationships?

According to path analysis results, e-CRM implementation has a positive relationship with all components of relationship quality and outcome. Factors with the highest effects are customer satisfaction, trust, and willingness to recommend, in that order.

A causal-effect analysis found that e-CRM had both a positive direct and a positive indirect effect on relationship quality and outcome.

### 6.1. Academic implications

This study helps in filling an area of empirical research on e-CRM measurement from the customers' side, which is deficient, especially in the service industry. It provides a measurement model of e-CRM implementation from the customer perspective. 'Customer-based service attributes' was developed as a construct to measure e-CRM outcomes from the customers' points of view. The factor analysis results demonstrated that three factors of customer-based service attributes (information, convenience, and communication channels) are central to an evaluation of the customers' perceptions of Thai commercial banks' e-CRM implementation.

In addition, this study indicates that the components that frequently comprise relationship quality—trust, satisfaction, and commitment—are statistically significantly correlated with the components of relationship outcomes—customer loyalty, retention, and willingness to recommend. Thus, this research combined constructs of relationship quality and relationship outcomes.

CFA was conducted to test both the measurement models developed in this study. The results validated the customer-based service attribute model, thereby confirming the results of the EFA, and the relationship quality and outcome model, thereby confirming the results of the qualitative approach and correlation results. Both measurement models are valid and reliable.

Path analysis found that customer-based service attributes play an essential mediating role in the relationship between e-CRM implementation and relationship quality and outcome. Relationship quality and outcome, which comprise overall relationship quality, customer satisfaction, trust, commitment, customer loyalty, customer retention, and willingness to recommend, are the result of the customers' recognition of their main banks' e-CRM implementation through information, convenience, and communication channels factors.

This research ratifies [Lemon and Rust's \(2001\)](#) study that showed that personalisation made banks truly understand their customers, which satisfied customers' expectations. In accord with the results from studies of the manufacturing industry, such as [Lang and Colgate \(2003\)](#) and [Kim et al. \(2006\)](#), the results of this study show that e-CRM implementation helps banks fulfil the bank–customer relationship, as measured through relationship quality and outcome.

This research also described the mediating role of customer-based service attributes. The causal-effect results show that in addition to the direct effect of e-CRM implementation on relationship quality and outcome, customer-based service attributes have a mediating effect on the relationship path between e-CRM implementation and relationship quality and outcome.

### 6.2. Managerial implications

From interviews with experts, the study found that only a few Thai commercial banks are currently investing in electronic channels and, unlike in developed countries, most of the respondents had not contacted their main banks via electronic channels.

This study focused on customers' perspectives on the aspects of their main banks' e-CRM implementation that they can acknowledge. The scope of the study is fundamentally characterised by the context of Thai commercial banks. Findings from this study show that currently, Thai commercial banks still have not emphasised e-CRM technology very much, and most applications of e-CRM are in analytical areas, meaning that they are related to the banks' internal processes. Only three banks had implemented operational e-CRM that customers can recognise, and the touch-points that customers can recognise are indirect touch-points, such as teller systems and telebanking. That is to say, there is still has much room for improvement of e-CRM in Thai commercial banks.

When banks implement e-CRM, their customers recognise that their main banks provide them with (1) more convenience, with one-stop and personalised service, (2) access to more complete, up-to-date, and accurate information, through various channels, and (3) more communication channels that allow them to contact their main banks from anywhere. The most gain from e-CRM implementation that customers can recognise is increased convenience.

This study confirmed the important role of e-CRM implementation in Thai commercial banks. The results show that e-CRM has statistically significant effects, both direct and indirect, on relationship quality and outcome. The statistical results show e-CRM implementation to be a viable means of increasing the bank–customer relationship quality and outcome, which comprises overall relationship quality, trust, satisfaction, commitment, loyalty, retention, and willingness to recommend.

These results indicate that if banks implement e-CRM, especially operational e-CRM, their customers will recognise additional service attributes and the customers' relationships with their banks will improve.

## 7. Limitations and future study

### 7.1. Research limitations

There are some limitations in this study. First, developing e-CRM will take long-term (at least three years according to Foss & Slone, 2002), consistent focus and effort. The first Thai bank that implemented e-CRM in operational areas started the implementation at the end of 2007, and it was insufficiently acknowledged because the functions that were implemented were not announced to the customers. Moreover, some Thai banks have had limited investment in e-CRM applications because they regard traditional CRM as sufficient.

Second, retention, which is one of constructs in this research, is a univariable construct that might not gather adequate information.

Third, since data was collected from banks' customers by stratified random sampling, some sample bias existed due to the personal relationships that respondents had previously established with their main banks' staff members.

Fourth, e-CRM implementation in this research was measured by binary variables due to the first limitation mentioned above, and the levels of implementation are not clearly distinguished.

### 7.2. Future study

In this study, the researcher divided the banks into only two groups: those that implemented e-CRM and those that did not. Grouping and comparison would be clearer if we were able to measure the banks' e-CRM implementation by level. Therefore, the measurement of e-CRM implementation levels of e-CRM features for the service industry is still needed.

This research focuses only on the Thai banking industry. Studies in different countries that also implement e-CRM can provide further useful information and benefits.

## Appendix A. List of relationship quality's components

Component	Author(s)
Trust	Crosby et al. (1990), Dwyer et al. (1987), Lagace, Dahlstrom, and Gassenheimer (1991), Wray, Palmer, and Bejou (1994), Bejou, Wray, and Ingram (1996), Kumar, Scheer, and Steenkamp (1995), Hennig-Thurau and Klee (1997), Dorsch et al. (1998), Wong and Sohail (2002), Hennig-Thurau et al. (2002), Lang and Colgate (2003), Ulaga and Eggert (2005), Keating et al. (2003), François and Goolen (2005), Mohr and Spekman (1994), Wilson and Jantrania (1994), Naude and Buttle (2001), Bennett and Barkensjo (2005), Ravald and Grönroos (1996), Roberts, Varkie, and Brodie (2003), Leonidou, Barnes, and Talias (2006), Woo and Ennew (2004)
Satisfaction	Crosby et al. (1990), Dwyer et al. (1987), Lagace et al. (1991), Wray et al. (1994), Bejou et al. (1996), Dorsch et al. (1998), Johnson et al. (1993), Hennig-Thurau et al. (2002), Lang and Colgate (2003), Ulaga and Eggert (2005), François and Goolen (2005), Storbacka et al. (1994), Wilson and Jantrania (1994), Naude and Buttle (2001), Roberts et al. (2003), Leonidou et al. (2006), Smith and Bolton (1998), Woo and Ennew (2004), Lages, Lages, and Lage (2005), Smith (1998)



## Appendix A (continued)

Component	Author(s)
Commitment	Moorman et al. (1992), Kumar et al. (1995), Hennig-Thurau and Klee (1997), Dorsch et al. (1998), Wong and Sohal (2002), Hennig-Thurau et al. (2002), Lang and Colgate (2003), Ulaga and Eggert (2005), François and Goolen(2005), Mohr and Spekman (1994), Storbacka et al. (1994), Bennett and Barkensjo (2005), Ravald and Grönroos (1996), Roberts et al. (2003), Leonidou et al. (2006), Woo and Ennew (2004)
Communication	Keating, Rugimbana, and Quazi (2003), Mohr and Spekman (1994), Storbacka et al. (1994), Leonidou et al. (2006), Lages et al. (2005)
Conflict	Kumar et al. (1995), Lang and Colgate (2003), Roberts et al. (2003)
Opportunism	Dwyer et al. (1987), Dorsch et al. (1998)
Cooperation	Johnson et al. (1993), Leonidou et al. (2006)
Understanding	Keating et al. (2003), Leonidou et al. (2006)
Customer power	Keating et al. (2003), Naude and Buttle (2001)
Coordination	Mohr and Spekman (1994), Naude and Buttle (2001)
Bonds	Storbacka et al. (1994), Wilson and Jantrania (1994)
Goal congruence	Wilson and Jantrania (1994)
Adaptation	Leonidou et al. (2006)

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## Further reading

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