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Cover Page Footnote

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Emotional bonds as promoters of IT capability

A study of affective commitment in industrial business relationships

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Abstract. The purpose of this paper is to investigate the prospective effect of affective commitment on relationship IT capability, and also investigate the role that relationship information exchange plays to support IT capability in industrial markets. Building on information systems research and business relationship research, a research model is developed and tested with LISREL on a sample of 353 customer-relationships of Swedish industrial firms. The results show that affective commitment in business relationships serves as a fundament that strengthens IT capability, when the exchange of information is important to a relationship. Interestingly enough, the LISREL-analysis provides empirical evidence that the effect of affective commitment on IT capability is mediated by information exchange in business relationships, but that the path from affective commitment to IT capability is not significant. Well-functioning information exchange systems are, thus, vital for affective commitment to impact IT capabilities in business relationship settings. This finding contributes with new knowledge about the role of emotions as prerequisites of IT capability development in the interfirm business relationships of industrial firms. The results highlight the importance of emotional bonds to support the development of interfirm IT capability.

Key words: IT capability, business relationships, affective commitment, information exchange, industrial markets.

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1 Introduction

A firm's Information Technology capability (IT capability) is closely connected to its ability to create business value (Klein and Rai 2009; Stoel and Muhanna 2009). Thus, IT capability development is increasingly important for all businesses participating in the progressively digitalised business world (Lee et al. 2018; Wu et al. 2017). IT capability is, in this paper, considered to be knowledge about IT at the firm level encompassing the ability to communicate and to develop competences and products (Chen et al. 2015; Yoon 2011). Following the ideas of Bharadwaj, Sambamurthy and Zmud (1999), IT capability concerns the use of IT in external linkages, specifically within business partnerships. This study thus concerns the inter-organizational setting of business relationships. Besides the importance of IT use for business partnerships, knowledge sharing is highlighted as important for inter-organisational IT capability development to occur (Figueiredo 2003; Mao et al. 2015).

A multitude of information-systems studies indicate that there exists a positive relationship between the development of IT capabilities and increased performance (Bharadwaj 2000; Figueiredo 2003; Lee et al. 2018; Liu et al. 2013; Tallon 2008; Vinther and Muller 2018). Technological capabilities can, therefore, be seen as a vital part of an organisations capabilities (Li et al. 2006; Soh and Markus 1995).

Already in the early 1990s, Venkatraman (1994) emphasised the profound importance that IT would have for business development, encompassing both IT capabilities that were developed internally and the capabilities that were developed externally together with business partners. Venkatraman's (1994) predictions about the importance of IT are followed up and confirmed in many subsequent studies (cf. Chen et al. 2015; Lu and Ramamurthy 2011; Wu et al. 2017). In particular, IT capabilities are considered to integrate effective information exchange between firms (Klein and Rai 2009). For effective information exchange to occur, firms, however, usually need to be mutually committed to each other. Mutual commitment nurtures both cooperation and IT development in interfirm relationships (Ekman et al. 2015; Gerow et al. 2015; Pan et al. 2015). Commitment and cooperation are especially important for interfirm relationships to work well because they create functional and emotional value (Barnes 2003; Gustafsson et al. 2005). Whereas functional value is related to a firm's ability to be convenient, accessible, and save the other party in the business relationship time and money, emotional value is created through the interaction between firms and the extent to which they make their counterpart feel important (Anderson and Weitz 1992; Barnes 2003; Meyer et al. 1993).

Regardless of how advanced an IT based information system is, technology cannot transfer all kinds of information that are necessary to build and maintain business

relationships (Lindh and Nordman 2018). Face-to-face interaction as compared to technology mediated communication is, for example, regarded as efficient for creating interpersonal trust which can lead to new knowledge development (Bathelt and Turi 2011; Nilsson and Mattes 2015; Rovira 2005). Particularly issues concerning product development processes and other technical considerations often require more personal forms of interaction (e.g., face-to-face meetings) between business counterparts to build trust and commitment (Rovira 2005). It is also these personal interaction activities that lay the foundation for the emotional value that is created in business relationships. To increase the understanding of IT capability, regarding it to be a creator of relationship value, the antecedents of relationship creation must be understood.

Consequently, this study builds on the idea that a social or emotional dimension is important for relationship-specific IT capabilities to develop. There is presently a lack of studies about how social aspects such interpersonal liking or disliking impact business relationships (Abosag et al. 2017). Although information systems (IS) studies have emphasised the importance of inter-organizational activities for integrating systems into business (Klein and Rai 2009), and for providing a fertile external environment for IT capability development (Stoel and Muhanna 2009; Yoon 2011), there is a lack of research about the antecedents of IT capability development from an inter-organizational context. Even though previous studies highlight both organisational and technical consequences of IT capability development, behavioural or social/emotional dimensions that can generate knowledge sharing need to be highlighted (Kjærgaard et al. 2010). Whereas there are plenty of studies showing that the development of software and information systems are strongly impacted by technology, researchers have to consider the social context under which these systems are developed to a greater extent (Brincker and Gundelach 2010). Thus, more studies are needed about how social aspects such as affective commitment (i.e., liking) impacts IT capability development in business relationships. In an article from 2014, Makkonen and Vuori highlight this gap in research and request more studies about how social aspects of IT influence business relationships. Also earlier studies by Barnes (2003) and Wu, Chiag, Wu and Tu (2004) emphasize the need to investigate social aspects of business exchange relationships further. To understand the potential of IT and its effects on business, human aspects must be considered (Orlikowski and Gash 1994; Soh and Markus 1995; Yoon 2011). Thus, the purpose of this study is to investigate the prospective effects of a social component (i.e., affective commitment) on relationship IT capability, and also investigate the role that relationship information exchange plays to support IT capability in industrial markets. Affective commitment is here defined as a firm's desired affection and commitment towards a specific business relationship, whereas relationship information

exchange is defined as the mutual expectation of both parties in a business relationship that useful information will be shared in an open manner (see: Cannon and Perreault 1999; Mullen 1994). In accordance with a discussion by Tippins and Sohi (2003), IT capability is defined as the knowledgeability about effective IT utilization. In this study, the argument is made that this kind of knowledgeability is captured by the use of IT in business relationships, for sharing information, generating learning and increasing IT knowledge (see: Bharadwaj 1999; Figueiredo 2003; Mao et al. 2015).

By investigating the effects of affective commitment and relationship information exchange on relationship IT capability, this study can contribute with new knowledge about the social prerequisites of IT capability development in the business relationships of industrial firms. The provision of this perspective also contributes to extend knowledge about how relational value can be co-created in business relationships, which is suggested by, e.g. . . . Klein and Rai (2009). In summary, the results of this study contribute to extend knowledge about the prerequisites of IT capability in information-systems-research and industrial marketing research. This is achieved in two ways: 1) By extending knowledge about the relationship between affective commitment and IT capability, thus investigating behavioural and organisational aspects of IS integration in business relationships, the study enriches IS research 2) By investigating the importance of affective commitment for IT capability development and longevity in industrial relationships, this study also has implications for firms that offer digitalized market solutions to customers and, thereby, enriches industrial marketing research.

Previous information-systems-studies have called for more research about external input for IT capability development (Chen et al. 2014). This study acknowledges the particular value of IT capability by positioning the construct as a performance (dependent) variable in the research model (which will be presented in the next section of the paper). This positioning differentiates this study from many other studies about IT capabilities, which regard IT capability as an antecedent to business performance (cf. Chen and Tsou 2012; Chen et al. 2014; Figueiredo; 2003; Li et al. 2006; Stohel and Muhanna 2009; Sanders and Premus 2005).

In the next section of the paper, the theoretical framework and the hypotheses are presented. This is followed by research methodology and analysis sections. A final discussion of the results, managerial implications and implications for future research conclude the paper.

2 Theoretical framework and hypothesis development

Within the industrial marketing research area, studies which focuses on the interrelationships between buyers and sellers are common (Dowell et al. 2015; Melén et al. 2017; Wu et al. 2004). Long-term business relationships are considered to be valuable resources because they generate continued business (Akrouf et al. 2016; Anderson and Weitz 1992; Graca et al. 2015; Håkansson 1982). Because business relationships are based on the combination of competencies that the relationship partners put into them, business relationships generate unique knowledge. This knowledge is also reflected in the IT capabilities that relationship partners develop (Fang et al. 2006).

The commitment-concept has long been used within the international marketing research area to explain the adaptation processes between firms, which are the result of the parties' intentions to act in specific manners towards each other (Gustafsson et al. 2005; Hadjikhani et al. 2012; Liljander and Strandvik 2005). Committed business relationships are generally regarded to be the key to increasing sales figures, long-term financial stability (Blankenburg Holm et al. 1999; Lee et al. 2015; Liu et al. 2015) and the creation of value (Haas et al. 2012). Besides being vital sources of income, industrial business partners function as suppliers of novel knowledge and information input (Melén et al. 2014; Nordman and Tolstoy 2014). Committed business relationships are, thus, argued to provide a fertile ground for the development of various capabilities and skills. Because capabilities frequently are developed within specific business relationships, relationship-settings are often seen as more important to study than individual firm-settings (Nordman and Tolstoy 2014; Wu et al. 2004).

In today's highly digitalized world, committed business relationships are still important. Most business relationships, however, need to incorporate IT systems into their interaction processes to stay competitive. The creation of value in business relationships is highly contingent on technological development, which in turn is essential for performance (Stoel and Muhanna 2009). Companies, thus, need to develop and comprehend the link between technology and organisational behaviour, because IT processes, collaboration and performance are interlinked (Sanders and Premus 2005). In particular, the link between the maintenance of cooperative relationships, and the development of technology usually is strong (Nordman and Tolstoy 2011). The behavioural dimension of cooperation is maintained by strong commitment (Blankenburg Holm et al. 1996).

An aspect that generally increases commitment in business relationships is when actors are tied together via social bonds, for example via affective commitment. Affective commitment is constituted by a feeling of belonging and the sense of attachment to an organization (Allen and Meyer 1990; Bloemer and Odekerken-Schröder 2003; Wu et

al. 2004). This kind of commitment generally needs to be infused in interpersonal relationships in order to be maintained and developed (Geyskens et al. 1996; Graca et al. 2015; Meyer et al. 1993). Geyskens et al. (1996) describe affective commitment as the “desire to continue the relationship”, thus emphasising its important role for enhancing business relationship longevity and success.

Companies that personalize their communication efforts and show attachment can convince customers that they are considered to be important and cared for (Bloemer and Odekerken-Schröder 2003). Emotional bonds between firms is thus typically strengthened by more personal forms of interaction (e.g., face-to-face communication). This kind of communication is the surest way to establish and nurture business relationships, and to induce commitment in them (Nardi and Whittaker 2002). Firms that are affectively committed to business counterparts also tend to build trusting relationships with them. Partners that trust each other are in their turn more likely to enable efficient communication (Yli-Renko et al. 2002) which enables firms to comprehend each other’s expectations and interact on agreeable terms (Park et al. 2014). Personal interaction, therefore, facilitates social bonding which simplifies information exchange and knowledge development by enhancing trust and learning (Bathelt and Turi 2011; Nilsson and Mattes 2015; Rovira 2005). Social linkages between people are thus often seen as a precondition of effective information exchange (Nardi and Whittaker 2002).

Effective information exchange is important for cooperating firms that want to co-develop capabilities and skills (Sanders and Premus 2005). In this study, information exchanges concerning marketing and products are highlighted, because these aspects are highly important for shaping the business relationships of industrial partners (Fang et al. 2006; Håkansson 1982). Information exchanges (e.g., concerning new marketing campaigns and new product offerings/product adaptation needs) are essential for the containment of most well-functioning business relationships. Firms can, thus, use their close business relationships to get new information and develop new knowledge that can be programmed into their routines, structures and decision-making systems (Nordman and Tolstoy 2016). Hence, a strong affective commitment towards specific customers strengthens both information exchange and stimulates the development of IT capabilities within these relationships, thus contributing to co-creation of value in them (Ekman et al. 2015; Rai et al. 2012; Zwass 2010).

Based on these ideas, affective commitment can be seen as facilitator for information exchange in business relationships. Previous studies have also indicated that affective commitment is fundamental for the exchange of information, because affective commitment decides the degree to which two parties are comfortable with their business and each other (Akrouf et al. 2016; Geyskens et al. 1996), (i.e., that they like each oth-

er). In the setting of a business relationships, in which IT capabilities are considered to be important, information sharing is usually connected to technology-use (Sanders and Premus 2005). Even though information is exchanged in technology-based systems, the relationships between interacting partners still are supported by the emotional structures that are present in these relationship, i.e., by affective commitment.

In summary, affective commitment builds on feelings of affection between business partners and is a way of aligning the dynamics of emotion in these business relationship with technology-use for information sharing (see: Mao et al. 2015). The emotional bond between business partners increases their loyalty and enhances their motivation to share information and work together (Allen and Meyer 1990; Rhoades et al. 2001). Consequently, the following hypothesis is proposed:

Hypothesis 1: Affective commitment positively impacts relationship information exchange.

Information that is exchanged between companies in their business is to a great extent enhanced by IT (Ekman et al. 2015; Li et al. 2006; Lindh and Nordman 2018) and some studies show symmetry between the level of investments in IT and the importance of the information exchanges that occur (Cannon and Perreault 1999; Mao et al. 2015). In general, a business relationship depends on the degree to which firms interact via exchanges and adaptations (Håkansson 1982). Investments in managing exchanges give both partners an incentive to reduce their costs and increase their benefits. This is achieved by developing knowledge about the procedures of the partner (Nordman 2009), such as knowledge about how to make the best use of the partner's IT systems. When a business relationship is important for a firm, and IT is employed to manage the communication within the relationship, information exchanges often contribute to increase learning which may enhance a firm's IT capability (Fang et al. 2006; Tippins and Sohi 2003). This entails that purposeful information exchanges in a specific important relationship generally strengthens the willingness to engage in IT use and in developing specific IT knowledge (Fang et al. 2006).

Firms that exchange information in a beneficial manner, often build trusting relationships which enhances their motivation to work together (Allen and Meyer 1990; Rhoades et al. 2001) and this can lead to new IT capabilities being developed. These capabilities can concern IT use (e.g., concerning sales-management, ordering-systems and delivery-notifications) for different business functions (Fang et al. 2006). Capabilities can also concern new IT knowledge development, for example the development of common IT systems for managing business processes (Figueiredo 2003; Mao

et al. 2015). Together IT use and IT knowledge generate IT capability and can even be seen as a ‘receipt’ that there exists IT capability in specific business relationships. If the exchange of information is important in a specific relationship, it is pertinent for companies to organise information sharing in a way that supports the development of IT knowledge in the relationship. The following two hypotheses describes the hypothesised relationship between information exchange, IT use (for information sharing purposes) and IT knowledge.

Hypothesis 2: Relationship information exchange positively impacts IT use.

Hypothesis 3: Relationship information exchange positively impacts IT knowledge.

When IT capability is nurtured in a business relationships, the commitment between the business partners will likely impact both IT use and IT knowledge development within that relationship. IT knowledge stipulates that firms understand the results of their IT investments, both in terms of direct financial investments and increased benefits, such as enhanced IT capability. The connection between IT capability and commitment is reflected in both the use and knowledge of IT processes. Firms that are in agreement with each other and have the desire to continue to invest in their business relationships, are likely to enhance their IT capability by continuing to interact via IT means (Mao et al. 2015). Essentially, cooperation contributes to the development of IT (Rai et al. 2012; Zwass 2010), implying that affectively committed firms will continue to strengthen both their IT use and IT knowledge as their relationships progresses. Thus, the following hypotheses are suggested.

Hypothesis 4: Affective commitment positively impacts IT use.

Hypothesis 5: Affective commitment positively impacts IT knowledge.

The hypothesised model suggests the following: Affective commitment influences the perception that information exchange with a business partner is important and this strengthens the willingness to exchange information. Strong affective commitment also nurtures the development of IT capabilities within a business relationship. Firms that are involved in close-knit relationships with business partners are more motivated to increase their IT capabilities to improve their communication. In such relationships, the business information that is exchanged is vital for new business to take place. When IT is used for exchanges (e.g., when business partners share information and suggest

necessary actions for solving problems with a software-product) this impacts actual learning about IT, i.e., the shared knowledge about IT. The act of information exchange bridges affective commitment with the efforts to use IT and the knowledge that is built around IT. Therefore, the exchange of information is hypothesised to increase relationship IT capability. In short, information exchange generates knowledge which enhances the IT capabilities of both firms in a committed business relationship. The suggested research model is summarised in Figure 1 below.

Based on the hypothesised model, this study investigates whether affective commitment is an antecedent to IT capability. The investigation is carried out in a business relationship setting between Swedish industrial companies. Even though the ideas in the research model is built on established theory about business relationships in industrial firms, the theoretical discussion is enriched with research about IT capability development from the IS research-field. These perspectives are combined as an effort to further integrate industrial marketing with IS-research. Even though the research model assumes that there exists a direct relationship between affective commitment and IT capability, information exchange is added to capture the importance of information and knowledge exchanges about specific business processes for IT capabilities to develop. Thus, affective commitment and IT capability is suggested to be mediated by information exchange.

3 Research methodology

This article investigates IT capability from the external perspective of business relationships, aiming to test idea that relationship-specific IT capability is influenced by

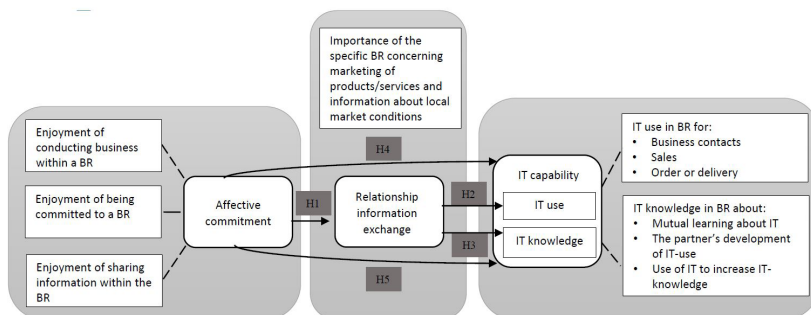


Figure 1. The research model

ongoing relationship-specific information exchanges, as well as affective commitment. This entails developing a model to explain a complex phenomenon and to make a general statement. Therefore, structural equation modelling (SEM) with data based on a survey questionnaire with standardized question items was constructed to collect data (Martínez-López et al. 2013). The method for computations is LISREL, a method permitting definitions and comparisons of constructs as well as relationships in a way appropriate for a structural model (Jöreskog and Sörbom 1993). LISREL is particularly appropriate for testing the suggested model, because it considers the paths as parts of a whole (i.e., single paths/hypothesis are not evaluated in separation) in the specified model (Eriksson 1998).

3.1 The questionnaire and sample

The study is built on a survey of information technology in business-to-business relationships conducted on Swedish based firms. To collect the data needed for the study, a standardised questionnaire was mailed to selected supplier-firms with limited liability, all based in Sweden (they were all registered companies with 5-500 employees). It is, however, difficult to get a high response rate in a study of this scope. Therefore, the selected companies were called by telephone and asked to participate. When an appropriate respondent agreed to participate, the questionnaire was mailed to this person. In total, 1100 companies were called by telephone and 353 questionnaires were collected. The most common reasons to decline participation was 1) lack of time and 2) reluctance to share information.

The questionnaire was designed to capture different characteristics of the investigated firms' behaviour related to business processes, such as financial, managerial, operational and technical issues. It also captures how IT is used and how IT affects different processes. Because the intention of the questionnaire was to assess and compare different elements of business relationships, a large portion of the questionnaire contained questions about one economically important customer relationship (the respondents' choice), to permit analysis of long-term oriented relationships.

The sample of 353 firms contains a wide range of companies selling industrial goods (9 percent), components (22 percent), light and heavy equipment (14 percent), B2B services (34 percent) and B2B end-user products (21 percent). Small, medium-sized and large companies are included in the sample. The average number of employees among the investigated firms is 33 and the average turnover among the investigated firms is 50 million SEK. The oldest company is about 400 years old and has one business relationship that is 90 years old.

The average age of the business relationships that are investigated is 13 years, and on average the investigated companies have about 1000 customers. For the purpose of this study it was important to find the right person to answer the questionnaire (a person with insight into how business relationships were managed). It was also essential that this individual chose to answer questions about a business relationship that was perceived to be important.

3.2 Latent variables (constructs)

The five hypotheses in the model (see Figure 1), test the relationships between the constructs (i.e., in the operationalisation they become latent variables because items appropriate for measurements are assessed). The question items used to motivate the constructs in these hypotheses stem from earlier studies about IT capability and studies about information exchange and commitment in industrial markets (the question items are displayed in Table 1). In order to capture business relationship-behaviours in industrial markets, the questionnaire was inspired by previous research, especially previous Scandinavian studies by industrial marketing and purchasing (IMP) researchers (e.g., see: Blankenburg Holm 1996; Havila 1996; Sandström 1990). Because the dimension of information technology was not investigated to a great extent in these studies, IT related questions were added to the questionnaire (cf. Lindh and Ekman 2016). The questions and measurements regarding IT were inspired by previous research in the information systems' research field (e.g., Melville et al. 2004).

The relationships that are analysed in this paper all concern behavioural aspects that are interpreted by the perceptions of the respondents. They are measured on a 7-degree categorical scale in which the respondents can choose to disagree or agree. The scale permits the respondents a wide range of choices and also provides a variety in answers that is necessary for multivariate analysis.

Affective Commitment: Mathieu and Zajac (1990) describe attitudinal commitment as the acceptance of organisational values and goals, suggesting affective commitment to be a firms' positive emotional commitment towards the relationship with a specific customer. Based on previous operationalisations of affective commitment (see: Cannon and Perreault 1999; Gustafsson et al. 2005; Mullen 1994), affective commitment is measured by combining the indicators, "We like doing business with this customer" and "We are always willing to make information available to this customer". These emotionally oriented measures are also highlighted as important by Allen and Meyer (1990). To pinpoint the actual commitment processes in the investigated relationships even more, the question "We feel a high level of commitment to this relationship" is

included. The word “feel” is used to capture the affective dimension of the latent variable and also to capture the intention to continue the relationship (inspired by Rhoades et al. 2001).

Relationship information exchange is perceived as information sharing that is important and interesting for both parties (see: Cannon and Perreault 1999) in business relationships. In the context of this study, information exchange is measured as the perceived importance of the business relationship for the marketing of products/services and information about the market (see: Blankenburg Holm 1996; Ritter et al. 2004). The research model displayed in Figure 1 suggests that affective commitment has a positive influence on information exchange, which in its turn increases IT capability. It is not merely the presence of information-exchange that might yield this effect. To create incitements for IT knowledge development and IT use (seen as preconditions for IT capability to be developed), the information that is exchanged must also be considered to be important for the relationship. When information-exchange is considered important (for both the supplier and the customer in a business relationship), information exchange may be an important mediator between affective commitment and IT capability. The reason that the importance of information exchange-construct is included in the model (that also encompasses IT capability), is that information sharing has been highlighted as important for IT, as suggested by, e.g. . . . Chen et al. (2015) and Sanders and Premus (2005).

IT capability: To measure IT capability, two latent variables (IT use and IT knowledge) are applied. Drawing on research about IT skills and knowledge-abilities by Figueiredo (2003) and Tippins and Sohi (2003), the constructs of IT use and IT knowledge were constructed. These two measures were, however, adapted to fit the business relationship approach better. IT use pertains to the dimension of how IT actually is used within interfirm business relationships, whereas IT knowledge reflects the learning and knowledge development about IT processes in business relationships. Intuitively, IT knowledge can be considered to best capture the dimension of IT capability. In accordance with Chen et al. (2014), IT capability is considered to be a multifaceted phenomenon that can be covered by various aspects of research. Tallon (2008) implies that “planning for the use of IT” is of importance for enhancing IT capability and IT skills. Chen et al. (2014) elaborate on this idea by describing IT capability as an IT management and IT business partnership, which also encompasses the skills of actual IT use. Building on this research, IT capability is considered to be a capability that is perceived to be mutually important for customers and suppliers in a specific business relationship. From such a relationship perspective, IT capability is contingent on knowledge about IT that has been acquired in the setting of the business relationship. The use of

IT in the relationship (e.g., how IT is used for generating orders and deliveries) also builds up the framework for IT knowledge being generated among the parties in the business relationship. IT use is measured by applying three relationship-oriented questions about the use of IT for business contact, sales and order/delivery. IT knowledge is measured by asking the respondents about the importance of the relationship (from their own and the customers' point of view) for learning about IT. The investigators also asked questions about the importance of their firm for their customer's development of IT use and whether they expect that their use of IT with a customer will increase their level of IT knowledge (see Table 1). Chen et al. (2015) support the idea that IT capability can be made operational by using specific measurement scales related to business relationships. This because the business relationship is such an important setting for IT development to occur.

3.3 Validity of model

LISREL has found many applications for tracing relations between latent variables in social science research (Jöreskog and Sörbom 1993). Its primary use is to confirm a hypothesised model and/or to explore relations without predefinitions. It is important to note that with LISREL the validity measures concern the whole model (the nomological validity) and the validity of separate relations are evaluated within the model (Eriksson 1998; Jöreskog and Sörbom 1993). Discrete interactions can be judged by the degree of separation between constructs as well as the degree of homogeneity between them. Separateness is determined by the degree to which the indicators of a latent variable converges to it (convergent validity), as well as the degree to which it is separate from other latent variables (discriminant validity) of the same model (Eriksson 1998). The established way to ascertain convergent and discriminant validity in this context is to meet given criteria. First, the values of coefficients – factor loadings, should be at least 0.3 (cf. Eriksson 1998). To further ascertain validity, also t-values are evaluated, and they should be over 1.96 (Eriksson 1998). The R² value estimates the strength of linearity (Blankenburg Holm et al. 1996; Jöreskog and Sörbom 1993) and should be over 0.2 (Eriksson 1998). Table 1 shows the descriptive statistics for the indicators of all latent variables (or constructs). All values for convergent and discriminant validity evaluated as factor loadings, t-values and R² values are met and exceeded. This is indicative of strong discriminant and convergent validity (Blankenburg Holm et al. 1999).

To further assess the quality of the data and its fit to the model, fit indexes are evaluated (Bollen 1989). The evaluation of several model-fit indices (in addition to the chi-square) ensures a satisfactory quality of the analysis. These are shown in Table 2 and are

<i>Latent variables (constructs) and indicators</i>		R^2	<i>t-value</i>	<i>factor loading</i>
<i>Affective commitment</i>	We like doing business with this customer	0.47	8.43	1.80
	We feel a high level of commitment to this relationship	0.65	5.07	1.91
	We are always willing to make information available to this customer	0.26	11.65	0.94
<i>Importance of information exchange</i>	How important is your company for this customer concerning the marketing of products/services?	0.42	8.89	1.27
	How important is this customer to your company concerning information about the market?	0.41	9.13	1.12
	How important is this customer to your company concerning the marketing of products/services?	0.38	9.57	1.04
<i>IT capability (IT used for information sharing)</i>	To what extent do you use IT in the relationship with this customer for business contact?	0.53	10.89	2.92
	To what extent do you use IT in the relationship with this customer for sales of your products?	0.69	7.96	2.11
	To what extent do you use IT in the relationship with this customer for order or delivery?	0.70	7.78	2.46
<i>IT capability (IT knowledge)</i>	How important is this customer for your learning about information technology?	0.76	3.79	1.58
	How important is your company for the customer's learning about information technology?	0.69	5.26	1.59
	How important is your company for the customer's development of IT use?	0.75	3.82	1.77
	We expect the use of IT with this customer to increase our level of IT knowledge.	0.30	11.09	2.33

Table 1. Items, loadings, t-value and lambda (factor loading)

all in accordance with the criteria of the model fit indices. Thus, the analysis clearly shows that there is an adequate fit between the model and the data and also diminishes threats to nomological validity.

<i>Fit measures</i>	<i>Fit guideline</i>	<i>Reference</i>	<i>Model (n=353)</i>
<i>Chi-Square (p-value)</i>	$P \geq 0.05$		63.68 (0.05)
<i>Chi-Square /df</i>	$P \leq 3.0$	Segars and Grover (1993)	1.35
<i>GFI</i>	$P \geq 0.90$	Hayduk (1988)	0.97
<i>AGFI</i>	$P \geq 0.80$	Hayduk (1988)	0.95
<i>CFI</i>	$P \geq 0.90$	Byrne (2001)	0.99
<i>TLI (NNFI)</i>	$P \geq 0.90$	Bentler and Bonnet (1980)	0.99
<i>RMSEA</i>	$P \leq 0.08$	Byrne (2001)	0.03

Table 2. Key statistics of the tested models: structural equation modelling

The nomological validity, i.e., the validity of the whole model is evidenced by the P-value, the model's probability measure, which preferably should be 0.05 or higher (Eriksson 1998). Also the chi-square, 63.68 is high. With 47 degrees of freedom at a probability of 0.05, the model has strong nomological validity and can be deemed reliable. The fit of the structured equation model in relation to the observed data and the model statistics, enables further consideration of path-significance between the constructs. These paths are elaborated on in Table 3. Further tests of the data and its reliability is provided in Appendix 1, displaying Cronbach's alpha, skewness and kurtosis on the construct level.

4 Analysis

The analysis supports the notion of a mediating effect (captured in relationship information exchange) between affective commitment and IT capability. Thus, there is no straight significant path from affective commitment to IT capability. However, the paths from affective commitment to importance of information exchange and from importance of information exchange to IT capability are significant (see: Aguinis et al. 2017; Baron and Kenny 1986). These results indicate that affective commitment generates an emotional structure which is relevant for enhancing IT capability, but it needs to support other activities, such as relationship information exchange, to have a significant effect on IT capability development. To increase the understanding of the antecedents of IT capability (seen as an emotionally supported structure), a holistic view is necessary, i.e., a view that encompasses elements that can act as mediators.

<i>Paths</i>	<i>Model (n=353)</i>	
	<i>Estimate</i>	<i>t-value</i>
<i>H1: Affective Commitment – Relationship information exchange</i>	0.48	5.86***
<i>H2: Importance of information exchange – IT use</i>	0.67	5.7***
<i>H3: Importance of information exchange – IT knowledge</i>	0.61	5.52***
<i>H4: Affective Commitment – IT use</i>	-0.16	-1.85
<i>H5: Affective Commitment – IT knowledge</i>	-0.14	-1.72

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

Table 3. The model's paths and significances

The first path in Table 3 concerns hypothesis one (suggesting that affective commitment strengthens relationship information exchange), which proves to be significant (0.48; 5.86***). Affective commitment positively impacts relationship information ex-

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change and strengthens the importance of its role. When two parties like each other, this strengthens their activities of important information exchanges.

The second and third hypotheses are supported, showing that relationship information exchange strengthens both IT use (0.67; 5.7^{***}) and IT knowledge (0.61; 5.52^{***}). These analytical results imply that the more important a business relationship is perceived to be for information exchange, the stronger is the effect on IT use and IT knowledge within this relationship. Hence, the more important and extensive the exchange of information in a relationship (generating experiences of exchanges in which technology-based systems can be used), the stronger is the positive impact of affective commitment on IT capability. This implies that IT capability, to a great extent, is based on learning-by-doing-processes, which in turn are strengthened by emotions.

The fourth and fifth hypotheses, suggesting that affective commitment strengthens both IT use (-0.16; -1.85) and IT knowledge (-0.14; -1.72) proves to be non-significant and are not supported by the analysis. Within the suggested model, there is no straight path between affective commitment, IT use and IT knowledge. Further research may, however, focus on other parameters which could enable a direct effect of affective commitment on IT capability.

5 Discussion

In conjunction, the analysis of this study shows that liking the business partner is not enough for companies to commit resources to relationship-specific IT use or develop relationship-specific knowledge about IT. When information exchanges are important for business purposes, liking, however, strengthens the development of IT capability. This calls for a revision of the proposed model (see Figure 2).

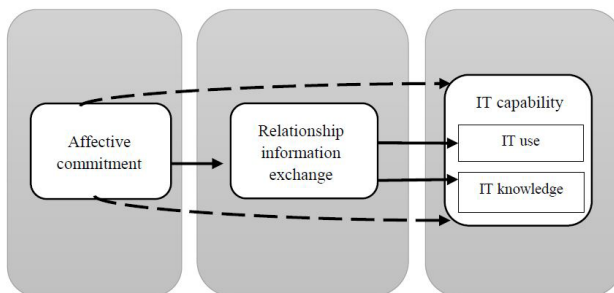


Figure 2. Revised model (dotted arrows indicate mediated effects)

Previous studies suggest that there is a positive relationship between affective commitment and information exchange (Akrouf et al. 2016; Geyskens et al. 1996), and this relationship is also supported in this study. Figure 2 highlights the positive relationship between relationship information exchange and IT capability (IT use and IT knowledge) and shows that information exchange is an activity that enhances IT capability. Nevertheless, because the model as a whole is valid (indicated by the $p > 0.05$), affective commitment leads to IT capability when it is mediated by important inter-relationship information exchanges.

The most interesting implication of these results are that information exchanges that are considered to be important constitute a strong mediating effect between affective commitment and IT capability. The presence of such an effect relates well to the basic idea that was presented in the beginning of this paper, namely that emotions and IT based systems nurture each other. Information that is exchanged in business relationships is important, but the IT based systems supporting that exchange are important for the relationship too. In the day-to-day business of committed business partners, affective commitment (such as strong emotional bonds), important information exchanges and IT capabilities are co-existing processes that nurture each other (although the constructs are separated in the present analysis).

Previous research has shown that firms often use their business relationships to obtain access to external knowledge that they can combine with their existing knowledge and, thereby, facilitate the development of new knowledge (Eriksson and Sharma 2003). This paper shows that strong affective commitment can enhance IT capability. In order for IT capabilities to be enhanced, the purpose of IT must, however, first be clearly defined and interpreted in information exchange processes.

These results demonstrate that business relationship structures need to be investigated from holistic perspectives, i.e., that more than single variables need to be taken into account when investigating relationship-oriented capability development processes. The results from this study, moreover, shows that IT capability is beneficial to investigate in a relationship-oriented context. Thereby, the study contributes with new knowledge and responds to the call for more studies about IT in interorganizational settings (Bharadwaj et al. 1999; Chen et al. 2014).

By combining ideas from IS-literature with industrial marketing literature, the results of this study contribute to extend both these fields. This is done by providing new knowledge about how social influences support knowledge sharing in interfirm collaborations. Already in 1994, Orlikowski and Gash (1994), pointed out that to understand the potential of IT, human aspects must be considered. Yet, there was a gap in research concerning the role of affective commitment as an antecedent to IT

capability. The inclusion of affective commitment as a representation of a social dimension construct answered the call for more research about this subject (see: Brincker and Gundelach 2010; Kjærgaard et al. 2010). Besides providing this perspective, the study can contribute to extend research about industrial firms, where calls have been made for more clarity regarding the relationship between IT and social elements such as trust and commitment (Makkonen and Vuori 2014; Wu et al. 2004). In particular, the results of this study highlight that there is a connection between affective commitment and IT capability—when information exchange is considered to be important. Such a situation can for example be in business relationships that are signified by continuous cooperation projects.

In the realm of business, the ability to develop IT capabilities often is essential, because IT utilisation helps firms sell products on a global basis. Because of this, many studies have over the last decades focused on the consequences for firms to communicate via IT means (cf. Karjaluoto et al. 2015; Pan et al. 2015; Park et al. 2014). Recent research implies that the utilisation of IT in industrial markets has not yet reached its full potential (Ekman et al. 2015). One reason for this is that there is a lack of in-depth knowledge about the context of IT capability in inter-firm settings such as within business relationships. This paper contributes to enhance knowledge about this issue. This study also supports earlier research showing that to enhance IT capability in inter-organisational settings, firms must commit to the use of IT (Huo et al. 2015).

Firms that work in accordance with daily routines to maintain business relationships know that the implementation of new ideas and new technologies requires extensive resource commitments (to influence individuals to get on board). The results of this study, that IT capabilities are nurtured and developed in the inter-organisational settings of business relationships, contributes to IS-research by highlighting the importance of the relational aspect for IT capabilities to develop. The contribution to the field of industrial marketing is also important since companies in increasingly digitalized industrial markets can neither achieve nor maintain profitability without enhancing their IT capabilities.

6 Managerial implications

Managers which seek to enhance their firms' IT capabilities must analyse their present information exchanges with business counterparts carefully to understand when they need to commit more resources into their relationships. To apply the results of this study in practice, managers must consider the implication that affective commitment only nurtures IT capability under the condition that information exchange plays a cen-

tral role in relationships. Moreover, commitment between companies is usually mutual and discussions of IT capability development need to include both the parties of the business relationship. When having these discussions, it is important to apply a holistic business perspective, one that allows the interchange of emotions as well as technologies to increase efficiency and improve information exchanges.

Firms wishing to increase their IT capabilities to enhance performance, can do so further by continuously consider the emotional settings of their business relationships. A beneficial emotional setting is often necessary to enable the commitment needed to enhance IT capability together with business counterparts. In essence, managers need to understand that the emotional environment (in relationships within or between firms) must be balanced with technological aspects for technologies to yield maximal benefits. Advantages can be obtained when considering that decisions about IT not only is an internal matter, but that business partners must be included too. When both functional and emotional values are created in a business relationship, the payback is evident in terms of repeat business, relationship longevity and referral business (Barnes 2003). When functional and emotional value also impact the development of IT capability (and in the long-run performance), relationship value as well as competitiveness may be achieved and sustained.

7 Limitations

The model that is discussed in this article, highlights the importance of including an intermediate variable (in this case, relationship information exchange) in the path from affective commitment to IT capability. There may, however, be other elements in a business relationship that could act as mediating variables in similar ways. A suggestion for future research, is to investigate other elements (besides relationship information exchange) which could act as mediators between commitment-measures and IT capabilities, such as for example cooperative production or technical adaptations.

IT capability has been shown to be a concept which encompasses many dimensions (Yoon 2011). Whereas this study has focused on the dimensions of IT knowledge and IT use, future studies should expand the construct of IT capability to capture even more of its facets and test their connection to different behavioural elements of relationships. There is much yet to learn about IT capability in business relationships. More studies that combine theories from the IS field with industrial marketing theories could enrich the study of relationship-specific IT capabilities further.

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8 Appendix 1

<i>Constructs (Latent variables)</i>	<i>Cronbach's Alfa</i>	<i>Kurtosis (standard error)</i>	<i>Standard deviation</i>
<i>Affective commitment</i>	0.614	0.264	2.72
<i>Importance of information exchange</i>	0.752	0.271	4.29
<i>IT capability (IT used for information sharing)</i>	0.810	0.269	5.05
<i>IT capability (IT knowledge)</i>	0.841	0.274	4.87

Table 4. Appendix 1