

# The role of absorptive capacity and information technology in the performance of marketing service companies

## El rol de la capacidad de absorción y las tecnologías de información en el desempeño de las compañías de servicio de marketing

FIGUEROA, Federico G.<sup>1</sup>

VÁZQUEZ, Manuel A.<sup>2</sup>

LIRA, Alfonso L.<sup>3</sup>

### Abstract

This article examines the effects of information technology (IT) capability and absorptive capacity (ACAP) on firm performance. The theoretical framework is based on the link between the resource-based view (RBV) and the knowledge-based view (KBV). Moreover, an analysis of 134 marketing service companies was performed with structural equation modeling (SEM). The results show that IT capability drives firm performance and supports the ACAP process in the firm.

**Keywords:** information technology, absorptive capacity, performance

### Resumen

Este artículo examina los efectos de la capacidad de la tecnología de la información (TI) y la capacidad de absorción (ACAP) en el rendimiento de la empresa. El marco teórico se basa en el vínculo entre la vista basada en recursos (VBR) y la vista basada en el conocimiento (VBC). Además, se realizó un análisis de 134 empresas de servicios de marketing con modelos de ecuaciones estructurales (SEM). Los resultados muestran que la capacidad de TI impulsa el rendimiento de la empresa y respalda el proceso ACAP en la empresa.

**Palabras clave:** capacidad de absorción, tecnologías de información, rendimiento de la empresa

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## 1. Introduction

During the last few years, at the global level, the need to understand new technologies as a strategic part of the business development plan has arisen; according to the study conducted by Digital Banking Report Research (DBRR), among the first five strategic priorities, one priority is to improve capabilities concerning the use of information technology (IT) capacity to absorb data, which impacts firm performance (DBRR, 2018).

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<sup>1</sup> Researcher. Universidad Autónoma de Nuevo León, FACPya. federico.figueroagr@uanl.edu.mx

<sup>2</sup> Researcher. Universidad Autónoma de Nuevo León, FACPya. manuel.vazquezcr@uanl.edu.mx

<sup>3</sup> Researcher. Universidad Autónoma de Nuevo León, FACPya. alfonso.lopezlr@uanl.edu.mx

There are studies that link marketing IT and absorptive capacity (ACAP) with firm performance; however, there is a scarcity of studies that link the two topics together and of those that specifically address marketing IT.

This study will answer the following research question. What is the mediating role of ACAP in the relationship between marketing IT and firm performance in marketing service companies?

Thus, the objective of this study is to analyze the mediating role of ACAP in the relationship between marketing IT and firm performance. Moreover, the relevance of this study is that it addresses competitive advantage through marketing IT and ACAP by merging two theoretical perspectives: the resource-based view (RBV) and the knowledge-based view (KBV).

This paper is divided into five main parts. First, the theoretical background of the components and elements of the RBV, the KBV and firm performance is presented, along with the hypotheses and conceptual model. Second, the quantitative research methodology based on structural equation modeling (SEM) is described. Third, the data analysis results are presented and discussed. Finally, conclusions and directions for future research are outlined.

### **1.1. Literature review**

This study is based on the merging of two theoretical perspectives: the RBV and the KBV. On the one hand, the RBV constitutes an emerging theoretical framework that examines the relationship between the internal characteristics of a company and its competitive positioning (Barney, 1991; Foss, 1997). On the other hand, the KBV determines the characteristics of knowledge that have important implications for the competitive advantage of the firm (Grant, 1996). These perspectives have a common ground in that they both suggest the enhancement of firm performance through competitive advantage.

### **1.2. Resource-based view**

The firm is an evolving entity that uses its resources as part of its strategic plan for achieving a competitive advantage. The key condition required to generate this advantage is that the resource capabilities are distributed heterogeneously among companies and that this heterogeneity persists over time (Ambrosini & Bowman, 2009; Amit & Schoemaker, 1993; Barney, 1991; Daniel & Wilson, 2002 Mahoney & Pandian, 1992; McKelvie & Davidsson, 2009; Wang & Ahmed, 2007; Wernerfelt, 1984).

The RBV states that to obtain a competitive advantage, the firm must have resources and capabilities with four characteristics—value, rarity, imitability, and organization (VRIO) (Barney, 1991). Value refers to whether or not the resource or capability works to exploit an opportunity or mitigate a threat in the marketplace. Rarity means that the firm has a valuable resource or capability that is absolutely unique among a set of resources and capabilities of the current and potential competitors. Imitability addresses the question of whether firms without such a resource or capability face a cost disadvantage in obtaining or developing this resource or capability compared to firms that already possess it. Organization refers to a firm being organized in a way that exploits these resources (Barney, 1991)

On the one hand, resources are defined as a collection of physical resources, human resources and organizational resources (Amit & Schoemaker, 1993; Barney, 1991). On the other hand, capabilities transform inputs into outputs of greater worth (Amit & Schoemaker, 1993; Capron & Hullan, 1999; Christensen & Overdorf, 2000; Sanchez, 1996; Schoemaker & Amit, 1994). Capabilities can include skills, such as technical or managerial ability, or processes, such as systems development or integration (Makadok, R., 2001).

Capabilities lead a firm to have a competitive advantage and can enhance its performance by relying on the use of IT. Firms leverage their IT investments to create unique capabilities that impact overall firm effectiveness

(Clemons & Row, 1991; Mata et al., 1995). Using the RBV framework, firms can formulate strategies to create and sustain advantages from their investments in IT (Duliba, Kauffman, & Lucas, 2001).

Ross, Beath, and Goodhue (1996) present descriptive examples to highlight the idea that IT capability can lead to competitive advantage and enhance firm performance.

According to Henderson and Venkatraman (1990), IT capability refers to the factors upon which organizations differ in their effectiveness of using IT for business transformation. Devaraj and Kohli (2003) suggested that the literature has overestimated the use of IT and proposed that the real use of IT in organizations is directly related to firm performance.

Creating IT capability is a process that must be formalized, managed and controlled. Linking IT capability with development and the achievement of business objectives has been addressed by Feeny, Willcocks, and Lacity (2006).

Firm performance parameters should be defined from the point of view of several authors. In the literature, there are different ways of measuring firm performance, including quantitative methods, such as sales (Meyer & Roberts, 1986), number of employees, cash flow (Stuart & Abetti, 1987), and returns on investment (Hofer & Sandberg, 1987), and qualitative methods, such as the satisfaction of entrepreneurs in relation to the results of the company (Stuart & Abetti, 1987), the comparison of the results of the company with those of the competition and the permanence in time of the company in the market, that is, its survival (Khan & Rocha, 1982). Thus, the success of a small or medium-sized enterprise (SME) is usually associated with its consolidation and growth in gaining market share, creating jobs and obtaining benefits for its shareholders. To create a better context of what firm performance is, in this paper, it is considered the development of firms' finances and growth in market share.

Some empirical studies regarding IT capabilities and firm performance in emerging economies have been conducted. For instance, Bharadwaj (2000) analyzed 50 companies and found a relationship between a company's IT capabilities and its performance by comparing the financial results of companies rated as IT leaders to those of the companies in the rest of the industry.

In support of this explanation, other empirical studies have shown that companies that govern IT improve their customer satisfaction and profitability (Fornell, Mithas, & Morgeson, 2009).

Studies by Dehning and Stratopoulos (2003) and Sambamurthy, Bharadwaj, and Grover (2003) show that IT capability is important in achieving positive business impacts, and the research of Qi, Lan, & Guo (2008) shows that IT capability cannot be purchased on the market as a finished product but rather must be developed over time.

The relevance of the studies presented in this subsection supports the following hypothesis:

H<sub>1</sub>: IT has a positive effect on firm performance.

### **1.3. Knowledge-based view**

Knowledge can be explained with the following comparison: knowledge is a concept similar to gravity, in that only its effects can be observed, but the phenomenon itself is unlikely to be observed.

The KBV determines the characteristics of knowledge that have important implications for the generation of the competitive advantage for a company (Grant, 1996). The KBV has largely extended the RBV, suggesting that knowledge is the primary resource and capability underlying new value creation, heterogeneity, and competitive advantage (Barney, 1991; Grant, 1996; Kogut & Zander, 1992).

Knowledge can be considered from two perspectives: as a resource and as a capacity. From the resource perspective, knowledge is intangible: many people and organizations are unaware of the value of the resource in contrast to tangible goods such as financial and monetary assets (Sveiby, 1997). From the capability point of view, knowledge is the linking of the competitive advantage of a firm to the tacit knowledge of its members to improve firm performance.

What are the knowledge capabilities of a firm? As pointed out by Gorman & Thomas (1997), “capabilities are somewhat less tangible and visible process-oriented resources”. Dutta, Narasimhan, and Rajiv (2005) claimed that capabilities refer to how a firm deploys its resources for generating value and achieving organizational objectives.

The concept of ACAP has recently been used to explain a diversity of phenomena, ranging from technology transfer among nations (Mowery & Oxley, 1996) to the efficiency of strategic international alliances (Lane & Lubatkin, 1998; Lane, Salk, & Lyles, 2001).

Cohen and Levinthal (1990) defined ACAP as “the ability of a firm to recognize the value of new external information, assimilate it and apply it for commercial purposes” (Cohen & Levinthal, 1990, p. 128).

Zahra and George (2002) further developed our understanding of this process by suggesting, first, that ACAP is a multidimensional construct that impinges at different times on different capabilities and routines and, second, by pointing out the existence of two subsets of ACAP: potential and realized. Potential ACAP (PACAP) enables a firm’s receptiveness to external knowledge, while realized ACAP (RACAP) reflects a firm’s capacity to leverage absorbed knowledge and transform it into innovative outcomes.

The KBV of the firm has attracted great interest in academia, as it recognizes the fundamental economic changes resulting from cumulativeness and availability of knowledge in the past two decades. We are witnessing a structural change in the productive paradigm (Carneiro & Heckman, 2003). The change from manufacturing to services in most developed economies has been based on the manipulation of information and symbols and not on the use of physical products (Fulk & DeSanctis, 1995).

Knowledge assimilation refers to a firm’s routines and procedures for analyzing, interpreting and understanding external information and combining such information with its existing knowledge (Lane et al., 2006; Zahra & George, 2002).

Application refers to routines that allow firms to gain a competitive advantage by incorporating assimilated knowledge into their daily operations (Lane et al., 2006; Zahra & George, 2002).

Tzokas, Kim, Akbar, and Al-Dajani (2015) highlighted the interactive nature of ACAP’s antecedents and how these backgrounds relate to firm performance and have contributed to the understanding of the role of ACAP as a mechanism for translating external knowledge into tangible benefits. Firms powered by ACAP are more likely to satisfy customers with low costs, high speed and high-quality products, which leads to a long-term competitive advantage for such firms.

Some empirical investigations have provided general support for the notion that the higher a firm’s ACAP is, the greater its financial performance (Chen, Lin, & Chang, 2009; Park & Rhee, 2012; Tsai, 2001; Zahra & Hayton, 2008). From another perspective, by enhancing knowledge transfer, ACAP has been theorized to contribute to a sustainable competitive advantage (Chen et al., 2009; Tsai, 2001; Zhang, Aikman, & Sun, 2008).

An empirical study conducted on 166 European firms by Bolívar-Ramos, García-Morales, and Martín-Rojas (2013) found that technical skills in IT and their use in interdependent tasks can influence the development of ACAP in an organization and have a positive impact on firm performance.

Considering the above findings, the following hypothesis is proposed:

H<sub>2</sub>: RACAP has a positive effect on firm performance.

#### **1.4. Joining the KBV and the RBV**

The research was carried out by creating a theoretical framework by merging two theoretical perspectives, the RBV and the KBV, which are explained below. On the one hand, the RBV constitutes an emerging theoretical framework that examines the relationship between the internal characteristics of the company and its competitive positioning (Barney, 1991; Foss, 1997). On the other hand, the KBV determines the characteristics of knowledge that have important implications for the management of a company (Grant, 1996). Having a developed capacity to capture knowledge and apply it as a unique resource is the path to improving firm performance and helps in improving the industry (Grant, 1996).

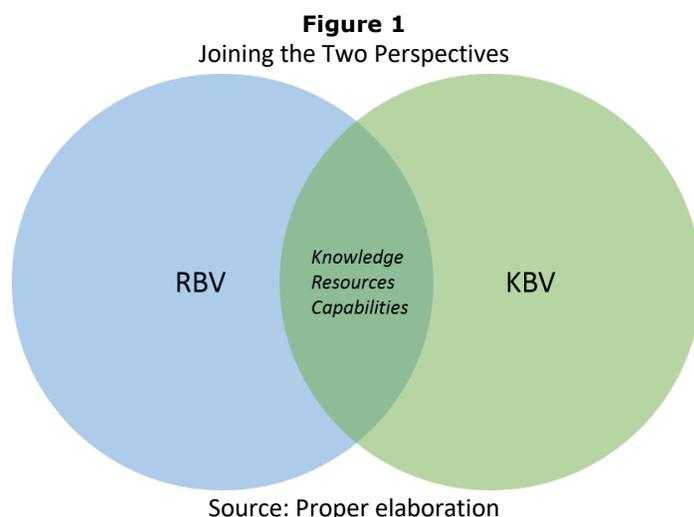
The basic viewpoint that both perspectives share is that the unique capabilities of an organization, in terms of technical know-how and skills, are an important source of heterogeneity that can lead to a sustainable competitive advantage and that are unlikely to be exchanged between companies (Barney, 1991).

Another basic viewpoint of the perspective of the knowledge-based company is that the capabilities of the company are hierarchically structured according to the field of knowledge they comprise (Grant, 1996), so the creation of broad capacities requires adequate knowledge integration. Specifically, four integration mechanisms can be used (Grant, 1996): rules and guidelines, sequences, routines, and problem solving and group decision making.

Zollo and Winter (2002) and Prashant and Harbir (2009) pointed out the transition from the RBV to the KBV by suggesting that capability development originates from knowledge and learning activities. These studies suggested that deliberate learning efforts provide the firm with a foundation for improving its ability to manage complex tasks, which can result in the enhancement of the organization. Based on the development of important skills by the firm's employees, which provides a competitive advantage, the evolution of learning capabilities considers the characteristics of uniqueness and difficulty to replicate them as a unique resource for the organization.

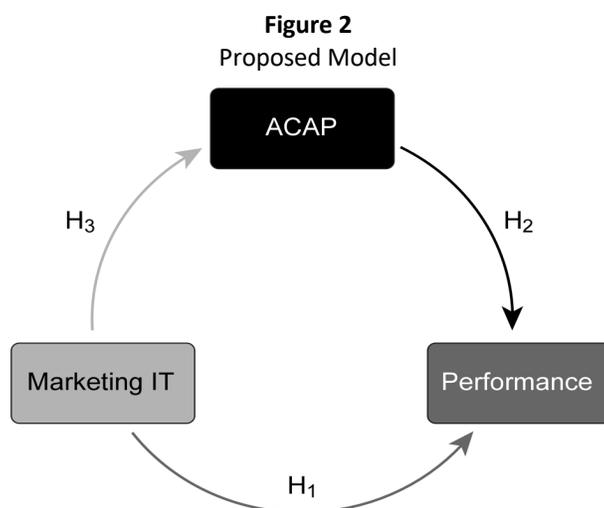
The integral vision of the firm that is considered in this research includes the premises and contributions of the two theoretical frameworks previously addressed.

For this research, a conceptual framework based on the union of the two theoretical perspectives is proposed (Figure 1).



Companies from emerging economies tend to capitalize on their international market knowledge and technological know-how. Knowledge is valuable, as it enables firms to lower their costs (Peng & York 2001; Kazlauskaitė, Autio, Gelbūda, & Šarapovas, 2015).

The final proposed model regarding this research is shown in Figure 2.



As presented in the previous paragraphs, there is a very solid research base that mentions the close connection between IT and ACAP given these factors. The following hypothesis is thus proposed:

H<sub>3</sub>: IT has a positive effect on the PACAP of a firm.

## 2. Methodology

This research is quantitative, conducted among the marketing service industry in the state of Nuevo León, and members affiliated with the Mexican Marketing Association were taken as the research population, with a total sample of 132 companies. The research design is not experimental, explanatory or transversal.

With the aim of testing the hypotheses formulated in the previous section, a questionnaire was developed based on the previous findings of different authors and translated and refined based on the contributions made by experts in the field. The questionnaire included 20 questions on knowledge management (KM) (Chauvet, 2007),

5 questions on marketing IT (Aduloju, 2014) and 3 questions on firm performance (Chearskul, 2009), measured on a 5-point Likert scale.

SEM was used to empirically verify the hypotheses, as it is a statistical technique for testing and estimating causal relationships using a combination of statistical data (Bagozzi & Yi, 1988). SEM can model complex and abstract variables that are not directly observable and/or can be used for models that pose multiple (causal) relationships among one or more independent variables and one or more dependent variables (Rodríguez-Pinto, Rodríguez-Escudero, & Cillán, 2008). This type of analysis has also been called causal modeling, although in this study, the denotation SEM will be used since, as Baumgartner and Homburg (1996) pointed out, the denomination causal modeling is not always adequate due to the difficulty of inferring causal relationships based on the results obtained with cross-sectional data, such as those in this study.

There are two types of statistical methodologies related to structural equations: covariance-based (CB) SEM and path modeling (PLS) SEM.

There are several studies that suggest that for developing a new theory, PLS SEM is preferred, and for testing a theory, CB SEM is the best option (Hwang, Malhotra, Kim, Tomiuk, & Hong, 2010; Reinartz, Haenlein, & Henseler, 2009). In this research, it was concluded that the best approach was to use CB SEM.

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### 3. Results

This section presents the results obtained through the questionnaire, both in the pilot test and in the final survey. All the processes performed during the statistical analysis are explained, and the results of SEM are also developed and discussed.

As documented by Hernández et al. (2010), any data measurement must meet three essential requirements: reliability, validity and objectivity. The reliability of a measuring instrument refers to “the degree to which the results can be replicated and produce equal results” (Hernández et al., 2010, p. 200). Validity refers to “the degree to which an instrument really measures the variable it intends to measure” (Hernández et al., 2010, p. 201). We can consider that validity is a concept that can show different types of evidence: that related to content, that related to the criteria, and that related to the construct. Please refer to Annex1 for the raw data of the surveys.

#### 3.1. Content validity and reliability

Some studies suggest that the indicators of the internal consistency of each construct are Cronbach's alpha coefficients and the composite reliability (CR) of the construct (Nunnally, 1978) Cronbach's alpha is the average of the correlations between the variables that are part of the scale and is used as an internal consistency index (Welch & Comer, 1988). The instrument will undergo both tests to have a more robust analysis of consistency, and the minimum acceptable value according to Nunnally (1978) is a reliability of 0.7.

The concept of CR, developed by Werts, Linn, and Jöreskog (1974), may be a more complete criterion than Cronbach's alpha coefficients, as Fornell and Larcker (1981) pointed out, because it starts with the real factor loads of the items that have been used in the causal model, while Cronbach's alpha coefficients assume that all loads are equal to a unit (Barclay, Higgins, & Thompson, 1995). Conversely, CR is not influenced by the number of items of the latent variable.

It is important to apply CR in the case where there are more than one latent variables involved in a theoretical model that explain the same concept or construct since Cronbach's alpha does not take into account such an influence on the reliability of the other latent variables or factors (Vila, Küster, & Áldas, 2000).

Convergent validity refers to the case in which if the different items intended to measure a concept or construct measure the same concepts, then the adjustment of these items will be significant and will be highly correlated. The assessment of convergent validity is carried out according to the measure developed by Fornell and Larcker (1981), called average variance extracted (AVE), which refers to the amount of variance that a construct obtains from its indicators in relation to the amount of variance due to measurement error.

Fornell and Larcker (1981) recommended that AVE must be greater than 0.50, which establishes that more than 50% of the variance in the construct is due to its indicators.

To have reliability and validity in the instrument applied and, in the results, several tests are needed to confirm or discard the instrument according to the results obtained. Table 1 presents a summary table with the tests performed.

**Table 1**  
Summarized validity results

Variable	Cronbach's Alpha	CR	AVE	Approved
ACAP	0.787	0.94	0.724	✓
Marketing IT	0.718	0.850	0.806	✓
Performance	0.788	0.902	0.869	✓

Source: Proper elaboration

### 3.2. Model fit

Model fit refers to the ability of a model to reproduce the data (usually the variance-covariance matrix). A model is said to have good fit when there is reasonable consistency with the data and when it does not require new specifications. Before interpreting the paths of the structural model, a measurement model with good fit is also required (Barrett, 2007).

In this model, to perform confirmatory factor analysis, we tested whether the exploratory factor structure showed correct adjustment indices; otherwise, the model was modified to achieve the best possible model. The aim of assessing the overall model fit was to determine the consistency level of the model as a whole with the available empirical data.

The  $\chi^2$  test shows whether the data perfectly fits the conceptual model and is therefore not considered the best measure for assessing model fit. The root mean square error of approximation (RMSEA) is considered one of the most informative fit indices.

Values below 0.05 indicate good fit; nonetheless, researchers mostly use the  $\chi^2$  per degree of freedom ( $\chi^2/df$ ) index and the comparative fit index (CFI) to assess model fit (Koutferos, 1999). The  $\chi^2$  per degree of freedom index indicates a reasonable fit when it is lower than 5.00 (Koutferos, 1999); however, values between 1.00 and 2.00 are recommended (Byrne, 2010). CFI indices should be close to 1.00 to represent good fit (Hair, J., Sarstedt, M., Ringle, C. & Mena, J. (2012).

The root mean square residual (RMR) index is based on the residual matrix and is used to compare the fit of two different models with the same data. Values of the standardized RMR index lower 0.05 represent good model fit (Steiger, 2007).

The absolute fit value for the goodness-of-fit index (GFI) is not computed; however, values closer to 1.00 represent better model fit (Guo, B., Perron, B. E., & Gillespie, D. F. (2009) and stated that 0.90 is considered an appropriate value representing acceptable model fit. The same stands for the adjusted GFI index.

The parsimonious GFI (PGFI) adjusts the GFI to the complexity of the given model and degrees of freedom. Values above 0.50 represent good model fit (Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003)).

In this research, the model indices imply that the model has good overall fit (Table 2).

**Table 2**  
Summarized model fit results

Test	Index	Results	Approved
Chi Square ( $X^2$ )	Between 1 and 3	1.265	✓
CFI	>0.95	0.934	✓
RMR	<0.08	0.071	✓
RMSEA	<0.06	0.045	✓
PClose	>0.05	0.668	✓
PGFI	>0.5	0.881	✓

Source: Proper elaboration

### 3.3. Discussion

In this subsection, the results obtained in this research are compared with the proposed hypotheses for their evaluation and acceptance or rejection to contribute to the investigation and discussion of the results in this work.

H<sub>1</sub>: IT has a positive effect on firm performance.

This hypothesis is proven by many authors, who show that the use of IT in business supports the financial and nonfinancial objectives of firms. As Barney (1991) states, the RBV argues that several companies may possess the same technology, but only those that exploit their technology more completely than other companies can gain a sustained competitive advantage and even superior long-term performance. A meta-analysis conducted by Liu (2013) shows the close relationship between IT and better firm performance.

The relationship between IT and better firm performance reinforces the hypotheses in this research, which are supported by Bamidele (2006), who establishes that the implementation and use of IT increases firm efficiency and performance. Other authors, such as Zhang, Sarker, and McCullough (2008), state that the skills, knowledge and experience of staff in relation to technology and their ability to integrate knowledge with business strategies generate a competitive advantage in an organization. Therefore, the impact of IT on firm performance has been investigated (Alderete & Gutiérrez, 2012), and the results indicate a positive impact. Please find the SEM model in Annex2 for all the details of the next paragraphs.

H<sub>2</sub>: RACAP has a positive effect on firm performance.

Based on the results obtained for this hypothesis, we observe that there is no positive relationship, which may be due to the fact that in the sample framework, companies did not always capitalize on their knowledge exploitation in monetary terms; this lack of a positive relationship may also be because the exploitation in the sample framework was more related to new forms of marketing and new ideas for obtaining a greater presence as a company and achieving department goals, rather being economically focused.

H<sub>3</sub>: IT has a positive effect on the PACAP of a firm.

This relationship is shown, but not as blunt as among other research variables, if there is an observable relationship that is more inconclusive in this area. In the sample framework, which was the object of this

research, technologies may not directly help the transformation of company knowledge, and companies may have other ways of transforming their knowledge, such as through constant training and seminars.

### 3.4. Implications, limitations and further research

The results of this research have several implications. First, the feedback from business practice supported the theoretical framework and hypotheses proposed in Section 2. The most important finding is that marketing IT components positively affect firm performance. To have a positive effect on firm performance, these components need to be developed, managed and integrated into organizational processes and practice.

Second, this empirical research proved that the performance of the companies heavily relies on technology. However, business practice shows that many organizations have experienced difficulties in effectively using RACAP to build KM technologies. To have a positive impact on knowledge elements, IT must be introduced through a set of organizational changes. In practice, that means that introducing IT is successful and has a positive impact on KM practices only if it is backed up by changes in people, the organizational climate and organizational processes. Organizational change helps an organization optimize its processes and define its process-oriented structure; in this case, KM can be adopted correctly within the organization. Effective RACAP concluding on KM technologies cannot be implemented without significant behavioral and cultural change. There should be strong culture, trust and transparency in all areas of the organization. In addition, the cultural elements that distinguish organizations from each other are found to be related to KM efficiency. Moreover, KM practices have a positive impact on firm performance. The results clearly show that the selected constructs are a good measure for implementing absorptive capacity and Information Technology and its effects on the company performances. Organizations could use the results of the survey as a benchmark.

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## 4. Conclusions

The research results have allowed this study to verify that there are different degrees of ACAP for the dimensions studied and to suggest the need to deepen the complementary and mutual reinforcement characteristics that the dimensions of ACAP should have. However, the relative importance of the dimensions of ACAP varies depending on the strategy adopted by companies.

The central objective of this investigation was to answer the following question. What is the mediating role of ACAP in the relationship between marketing IT and firm performance in marketing service companies?

The results obtained in this research provide us with both theoretical and empirical evidence on how information and communication technologies directly drive the development of a company positively influencing the performance of the same and, to some extent, also support the process of ACAP for the company's better understanding and use of these technologies.

In an effort to consider this investigation in the business industry, the limitations of this research due to external factors, such as the motivation and cooperation of organizations with the aim of sharing information, should be highlighted. Despite the lack of participation of companies in general, some opened their doors to help improve the data and analysis, which has greatly enriched this research.

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## Bibliographic references

Aduloju, S. A. (2014). Information technology managerial capabilities and customer service performance among insurance firms in Nigeria. *SAGE Open*, 4(4), 215824401456119.

Alderete, M. V., & Gutiérrez, L. H. (2012). TIC y productividad en las industrias de servicios en Colombia. *Lecturas de Economía*, 77, 163-188.

- Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management? *International Journal of Management Reviews*, 11(1), 29-49.
- Amit, R., & Schoemaker, P. J. H. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(1), 33-46.
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74-94.
- Bamidele, S. O. (2006). Development of modern ICT and internet system. In A. A. Agagu (Ed.), *Information and communication technology (ICT) and computer applications* (pp. 1-3). Abuja, Nigeria: Pamof Pree.
- Barclay D, Higgins C, Thompson R (1995) The Partial Least Squares (PLS): Approach to causal modeling: personal computer adoption and use as an illustration. *Technology studies 2*: 285–309.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Barrett, P. (2007). Structural equation modelling: adjudging model fit. *Personality and Individual Differences*, 42, 815–824.
- Baumgartner, Hans and Christian Homburg (1996). Applications of structural equation modeling in marketing and consumer research: A review. *International Journal of Research in Marketing*, 13 (2), 139-161
- Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and firm performance: An empirical investigation. *MIS Quarterly*, 24(1), 169-196.
- Bolívar-Ramos, M. T., García-Morales, V. J., & Martín-Rojas, R. (2013). The effects of information technology on absorptive capacity and organisational performance. *Technology Analysis & Strategic Management*, 25(8), 905-922.
- Byrne, B. M. (2010). *Structural equation modeling with AMOS*, (2nd ed.). New York: Routledge.
- Capron, L., & Hulland, J. (1999). Redeployment of brands, sales forces, and general marketing management expertise following horizontal acquisitions: A resource-based view. *Journal of Marketing*, 63(2), 41-54.
- Carneiro, P. M., & Heckman, J. J. (2003). *Human capital policy*. IZA Discussion paper no. 821. Retrieved from <https://ssrn.com/abstract=434544>
- Chauvet, V. (2007). An individual perspective of absorptive capacity: The role of the CEO and knowledge transfer mechanisms.
- Chearskul, P. (2009, 14-17 October). Development and assessment of a PM use survey. In Paper presented at the 30th American Society for engineering management national conference. Springfield, MO.
- Chen, Y.-S., Lin, M.-J. J., & Chang, C.-H. (2009). The positive effects of relationship learning and absorptive capacity on innovation performance and competitive advantage in industrial markets. *Industrial Marketing Management*, 38(2), 152-158.
- Christensen, C. M., & Overdorf, M. (2000). Meeting the challenge of disruptive change. *Harvard Business Review*, 78, 67-76.
- Clemons, E. K., & Row, M. C. (1991). Information technology at Rosenbluth travel: Competitive advantage in a rapidly growing global service company. *Journal of Management Information Systems*, 8(2), 53-80.

- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152.
- Daniel, E., Wilson, H., & Myers, A. (2002). Adoption of e-commerce by SMEs in the UK. *International Small Business Journal: Researching Entrepreneurship*, 20(3), 253-270.
- Dehning, B., & Stratopoulos, T. (2003). Determinants of a sustainable competitive advantage due to an IT-enabled strategy. *The Journal of Strategic Information Systems*, 12(1), 7-28.
- Devaraj, S., & Kohli, R. (2003). Performance impacts of information technology: Is actual usage the missing link? *Management Science*, 49(3), 273-289.
- Duliba, K. A., Kauffman, R. J., & Lucas, H. C. (2001). Appropriating value from computerized reservation system ownership in the airline industry. *Organization Science*, 12(6), 702-728.
- Dutta, S., Narasimhan, O., & Rajiv, S. (2005). Conceptualizing and measuring capabilities: Methodology and empirical application. *Strategic Management Journal*, 26(3), 277-285.
- Feeny, D., Willcocks, L., & Lacity, M. C. (2006). Business process outsourcing, knowledge and innovation – A study of enterprise partnership. In R. Hirschheim, A. Heinzl, & J. Dibbern (Eds.), *Information systems outsourcing: Enduring themes, new perspectives and global challenges* (pp. 543-581). Berlin, Heidelberg: Springer Berlin Heidelberg.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50
- Fornell, C., Mithas, S., & Morgeson, F. V. (2009). Commentary—The economic and statistical significance of stock returns on customer satisfaction. *Marketing Science*, 28(5), 820-825.
- Foss, N. J. (1997). *Resources, firms and strategies: A reader in the resource-based perspective*. Oxford: Oxford University Press.
- Fulk, J., & DeSanctis, G. (1995). Electronic communication and changing organizational forms. *Organization Science*, 6(4), 337-349.
- Gorman, P., & Thomas, H. (1997). The theory and practice of competence-based competition. *Long Range Planning*, 30(4), 615–620.
- Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(S2), 109-122.
- Guo, B., Perron, B. E., & Gillespie, D. F. (2009). A Systematic Review of Structural Equation Modelling in Social Work Research. *British journal of social work*, 39(8), 1556–1574. <https://doi.org/10.1093/bjsw/bcn101>
- Hair, Joseph & Sarstedt, Marko & Ringle, Christian & Mena, Jannette. (2012). An Assessment of the Use of Partial Least Squares Structural Equation Modeling in Marketing Research. *Journal of the Academy of Marketing Science*. 40. 414–433. 10.1007/s11747-011-0261-6.
- Henderson, J. C., & Venkatraman, N. (1990). *Strategic alignment: A model for organizational transformation via information technology*. Cambridge, MA: Center for Information Systems Research.
- Hernández, R., Fernández, C., & Baptista, P. (2006). *Metodología de la investigación*. México.

- Hofer, C. W., & Sandberg, W. R. (1987). Improving new venture performance: Some guidelines for success. *American Journal of Small Business*, 12(1), 11-26.
- Hwang, H., Malhotra, N., Kim, Y., Tomiuk, M., & Hong, S. (2010). A comparative study on parameter recovery of three approaches to structural equation modeling. *Journal of Marketing Research*, 47(4), 699-712.
- Kazlauskaitė, R. & Autio, E., Erkkö, J. & Gelbuda, M., Modestas, L. & Šarapovas, T. (2015). The Resource-based View and SME Internationalisation: An Emerging Economy Perspective. *Entrepreneurial Business and Economics Review*. 3. 53-64.
- Khan, M. R., & Rocha, J. R. (1982). Recurring managerial problems in small business. *American Journal of Small Business*, 7(1), 50-58.
- Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*, 3(3), 383-397.
- Koufteros, X. (1999). Testing a Model of Pull Production: A Paradigm for Manufacturing Research Using Structural Equation Modeling. *Journal of Operations Management*. 17. 467-488. 10.1016/S0272-6963(99)00002-9.
- Lane, P. J., & Lubatkin, M. (1998). Relative absorptive capacity and interorganizational learning. *Strategic Management Journal*, 19(5), 461-477.
- Lane, P. J., Salk, J. E., & Lyles, M. A. (2001). Absorptive capacity, learning, and performance in international joint ventures. *Strategic Management Journal*, 22(12), 1139-1161.
- Lane, P. J. & Koka, B. R., Balaji, V. & Pathak, S. (2006). The Reification of Absorptive Capacity: A Critical Review and Rejuvenation of the Construct. *The Academy of Management Review*. 31. 833-863. 10.5465/AMR.2006.22527456.
- Liu, P., Zhao, R., Wang, W., and Xiao, J. (2013) Information technology capability and firm performance: A meta-analysis, 2013 10th International Conference on Service Systems and Service Management, Hong Kong, 719-724.
- Mahoney, J. T., & Pandian, J. R. (1992). The resource-based view within the conversation of strategic management. *Strategic Management Journal*, 13(5), 363-380.
- Makadok, R. (2001). Toward a Synthesis of the Resource-Based View and Dynamic-Capability Views of Rent Creation. *Strategic Management Journal*, 22 (5), 387-401.
- Mata, F., Fuerst, W., & Barney, J. (1995). Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis. *MIS Quarterly*, 19(4), 487-505.
- McKelvie, A., & Davidsson, P. (2009). From resource base to dynamic capabilities: An investigation of new firms. *British Journal of Management*, 20, S63-S80.
- Meyer, M., & Roberts, E. (1986). New product strategy in small technology-based firms: A pilot study. *Management Science*, 32(7), 806-821.
- Mowery, D. C., Oxley, J. E., & Silverman, B. S. (1996). Strategic alliances and interfirm knowledge transfer. *Strategic Management Journal*, 17(S2), 77-91.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.

- Park, T., & Rhee, J. (2012). Antecedents of knowledge competency and performance in born globals. *Management Decision*, 50(8), 1361-1381.
- Peng, M. W., & York, A. S. 2001. Behind intermediary performance in export trade: transactions, agents, and resources. *Journal of International Business Studies*, 32(2): 327-346.
- Prashant, K., & Harbir, S. (2009). Managing strategic alliances: What do we know now, and where do we go from here? *Academy of Management Perspectives*, 23(3), 45-62.
- Qi, Xianfeng & Lan, Boxiong & Guo, Zhenwei. (2008). Conceptual Model of IT Infrastructure Capability and Its Empirical Justification. *Tsinghua Science & Technology*. 13. 390-394. 10.1016/S1007-0214(08)70062-2.
- Reinartz, Werner & Haenlein, Michael & Henseler, Jörg. (2009). An Empirical Comparison of the Efficacy of Covariance-Based and Variance-Based SEM. *International Journal of Research in Marketing*. 26. 332-344. 10.1016/j.ijresmar.2009.08.001.
- Rodríguez Pinto, J., Rodríguez Escudero, A. & Gutiérrez Cillán, J. (2008): "Order, positioning, scope and outcomes of market entry", *Industrial Marketing Management*, 37(2), pp.154-166.
- Ross, J. W., Beath, C. M., & Goodhue, D. L. (1996). Develop long-term competitiveness through information technology assets. *Sloan Management Review*, 38(1), 31-42.
- Sambamurthy, V., Bharadwaj, A., & Grover, V. (2003). Shaping agility through digital options: Reconceptualizing the role of information technology in contemporary firms. *MIS Quarterly*, 27(2), 237-263.
- Sanchez, R. (1996). Strategic product creation: Managing new interactions of technology, markets, and organizations. *European Management Journal*, 14(2), 121-138.
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of psychological research online*, 8(2), 23-74.
- Schoemaker, Paul & Amit, Raphael. (1994). Investment in strategic assets: Industry and firm-level perspectives. *Advances in Strategic Management*. 10. 3-33.
- Steiger, James. (2007). Understanding the Limitations of Global Fit Assessment in Structural Equation Modeling. *Personality and Individual Differences - PERS INDIV DIFFER*. 42. 893-898. 10.1016/j.paid.2006.09.017.
- Stuart, R., & Abetti, P. A. (1987). Start-up ventures: Towards the prediction of initial success. *Journal of Business Venturing*, 2(3), 215-230.
- Sveiby, K. (1997). *The new organisational wealth - managing and measuring knowledge-based assets*. San Francisco, CA: Berrett-Koehler.
- Tsai, W. (2001). Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy of Management Journal*, 44(5), 996-1004.
- Tzokas, N., Kim, Y. A., Akbar, H., & Al-Dajani, H. (2015). Absorptive capacity and performance: The role of customer relationship and technological capabilities in high-tech SMEs. *Industrial Marketing Management*, 47, 134-142.
- Vila L., N, Küster B, I. & Áldas, J (2000). Desarrollo y validación de escalas de medida en marketing. *Paper Universidad de Valencia*.

- Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, 9(1), 31-51.
- Welch, S. & Comer (1988). Quantitative Methods For Public Administration. Brooks/Cole Publishing Co., 168-296.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180.
- Werts, C. E., Linn, R. L., & Jöreskog, K. G. (1974). Intraclass Reliability Estimates: Testing Structural Assumptions. *Educational and Psychological Measurement*, 34(1), 25–33.  
<https://doi.org/10.1177/001316447403400104>
- Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27(2), 185-203.
- Zahra, S. A., & Hayton, J. C. (2008). The effect of international venturing on firm performance: The moderating influence of absorptive capacity. *Journal of Business Venturing*, 23(2), 195-220.
- Zhang, M., Sarker, S., & McCullough, J. (2008). Measuring information technology capability of export-focused small or medium sized enterprises in china. *Journal of Global Information Management*, 16(3), 1-25.
- Zhang, P., Aikman, S. N., & Sun, H. (2008). Two types of attitudes in ICT acceptance and use. *International Journal of Human-Computer Interaction*, 24(7), 628-648.
- Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3), 339-351

## Annex 1

Potential Absorptive Capacity (PACAP)

Survey	PACAP1	PACAP2	PACAP3	PACAP4	PACAP5	PACAP6	PACAP7	PACAP8	PACAP9	PACAP10
1	4	3	3	3	4	4	4	4	4	4
2	3	2	4	3	4	3	4	4	3	4
3	4	3	4	3	3	2	4	4	2	4
4	5	5	4	5	4	1	2	2	2	2
5	2	2	2	2	2	4	4	4	4	4
6	3	2	2	3	2	4	4	4	4	4
7	2	1	1	2	1	1	2	5	5	5
8	3	2	4	4	2	3	4	4	4	4
9	2	4	3	3	3	3	4	4	3	3
10	1	1	1	1	1	4	4	4	4	4
11	2	2	2	5	4	2	5	5	3	5
12	3	3	2	1	1	4	5	5	5	4
13	1	3	1	3	1	3	5	5	5	4
14	3	4	3	4	4	2	4	3	3	4
15	4	4	4	4	4	2	3	2	2	2
16	4	4	3	4	4	4	3	3	4	3
17	3	3	3	2	3	3	3	3	4	2
18	1	3	1	3	1	3	4	4	4	4

Survey	PACAP1	PACAP2	PACAP3	PACAP4	PACAP5	PACAP6	PACAP7	PACAP8	PACAP9	PACAP10
19	1	3	3	3	2	2	3	3	3	3
20	4	4	4	4	3	3	3	3	3	3
21	2	2	2	1	1	3	5	4	4	4
22	3	2	1	2	2	3	4	4	4	4
23	2	4	2	2	3	2	5	5	5	4
24	4	4	2	4	3	2	4	4	3	3
25	2	2	2	2	2	4	4	4	3	4
26	2	5	2	3	4	5	4	4	4	4
27	1	2	2	2	2	4	5	5	4	5
28	1	2	1	3	1	4	4	4	4	4
29	3	4	2	3	4	3	3	4	3	3
30	4	4	4	4	4	3	4	4	3	4
31	3	2	2	3	3	3	3	4	3	4
32	3	1	2	1	4	3	3	5	4	4
33	2	2	2	2	4	2	5	5	5	5
34	4	3	4	4	3	3	3	3	3	3
35	3	3	2	2	2	3	4	4	2	4
36	2	1	3	2	2	4	3	4	4	3
37	3	3	3	2	4	4	4	4	4	4
38	3	3	3	4	3	2	3	3	3	3
39	1	1	1	1	3	1	3	3	3	3
40	4	5	5	4	1	1	1	1	2	2
41	4	5	4	4	5	2	4	2	2	2
42	4	4	2	4	4	4	2	4	2	4
43	5	3	4	4	4	3	3	4	3	4
44	4	4	4	4	4	3	3	3	3	3
45	1	2	2	2	3	3	4	4	4	4
46	3	4	3	3	3	3	4	4	4	4
47	3	4	3	4	3	3	3	2	2	2
48	3	2	3	2	3	3	4	4	4	3
49	5	4	4	4	3	2	3	3	3	3
50	2	2	3	4	2	4	3	3	3	3
51	2	2	3	2	3	4	4	4	4	4
52	3	2	1	1	2	4	5	5	4	5
53	4	3	3	2	3	4	3	4	3	4
54	3	2	3	3	4	4	4	4	3	4
55	1	4	3	3	3	3	4	5	4	4
56	3	2	3	2	4	3	3	4	4	2
57	2	2	3	2	2	3	4	4	3	4
58	3	2	3	2	2	2	4	4	3	4
59	2	2	3	2	3	2	3	4	4	4
60	4	3	3	4	4	4	3	3	2	3

Survey	PACAP1	PACAP2	PACAP3	PACAP4	PACAP5	PACAP6	PACAP7	PACAP8	PACAP9	PACAP10
61	1	4	1	1	2	2	4	5	4	4
62	3	2	2	2	3	2	3	3	3	4
63	1	2	1	3	4	2	1	4	4	4
64	3	2	3	3	3	2	4	4	3	3
65	3	3	3	2	2	4	3	4	4	4
66	2	2	2	2	2	3	3	4	3	4
67	4	4	4	4	4	3	3	3	3	3
68	4	5	3	4	5	1	2	1	2	2
69	3	4	4	3	3	2	4	4	4	3
70	4	3	5	5	5	4	5	5	5	5
71	4	4	4	4	4	3	3	2	3	3
72	4	4	4	4	3	2	5	5	3	4
73	4	2	2	3	5	1	4	3	4	2
74	3	4	4	3	2	3	3	4	3	3
75	3	3	2	1	3	4	4	4	2	3
76	1	1	1	1	3	2	4	4	2	4
77	4	5	5	4	1	1	2	2	2	2
78	4	5	4	4	5	4	4	4	4	4
79	4	4	2	4	4	4	4	4	4	4
80	5	3	4	4	4	1	2	5	5	5
81	4	4	4	4	4	3	4	4	4	4
82	1	2	2	2	3	3	4	4	3	3
83	3	4	3	3	3	4	4	4	4	4
84	3	4	3	4	3	2	5	5	3	5
85	3	2	3	2	3	4	5	5	5	4
86	5	4	4	4	3	3	5	5	5	4
87	2	2	3	4	2	2	4	3	3	4
88	2	2	3	2	3	2	3	2	2	2
89	3	2	1	1	2	4	3	3	4	3
90	4	3	3	2	3	3	3	3	4	2
91	3	2	3	3	4	5	4	4	4	4
92	1	4	3	3	3	4	5	5	4	5
93	3	2	3	2	4	4	4	4	4	4
94	2	2	3	2	2	3	3	4	3	3
95	3	2	3	2	2	3	4	4	3	4
96	2	2	2	2	4	3	3	4	3	4
97	4	3	4	4	3	3	3	5	4	4
98	3	3	2	2	2	2	5	5	5	5
99	2	1	3	2	2	3	3	3	3	3
100	3	3	3	2	4	3	4	4	2	4
101	3	3	3	4	3	4	3	4	4	3
102	4	3	4	3	3	3	5	5	5	4

Survey	PACAP1	PACAP2	PACAP3	PACAP4	PACAP5	PACAP6	PACAP7	PACAP8	PACAP9	PACAP10
103	5	5	4	5	4	3	4	5	4	4
104	2	2	3	2	3	3	3	4	4	2
105	4	3	3	4	4	3	4	4	3	4
106	1	4	1	1	2	2	4	4	3	4
107	3	2	2	2	3	2	3	4	4	4
108	1	2	1	3	4	4	3	3	2	3
109	3	2	3	3	3	2	4	5	4	4
110	3	3	3	2	2	2	3	3	3	4
111	2	2	2	2	2	2	1	4	4	4
112	4	4	4	4	4	2	4	4	3	3
113	4	5	3	4	5	4	3	4	4	4
114	3	4	4	3	3	3	3	4	3	4
115	4	3	5	5	5	3	3	3	3	3
116	4	4	4	4	4	1	2	1	2	2
117	4	4	4	4	3	2	4	4	4	3
118	4	2	2	3	5	4	5	5	5	5
119	3	4	4	3	2	3	3	2	3	3
120	3	3	2	1	3	2	5	5	3	4
121	4	4	2	4	3	1	4	3	4	2
122	2	2	2	2	2	3	3	4	3	3
123	2	5	2	3	4	4	4	4	2	3
124	1	2	2	2	2	4	4	4	3	4
125	1	2	1	3	1	3	4	5	4	4
126	3	4	2	3	4	3	3	4	4	2
127	4	4	4	4	4	3	4	4	3	4
128	3	2	2	3	3	2	4	4	3	4
129	3	1	2	1	4	4	4	2	4	3
130	5	5	4	5	4	3	4	5	4	4
131	4	4	5	4	3	2	4	4	4	3
132	4	3	4	3	3	3	5	5	5	4

Realized Absorptive Capacity (RACAP)

Survey	RACAP1	RACAP2	RACAP3	RACAP4	RACAP5	RACAP6	RACAP7	RACAP8	RACAP9	RACAP10
1	1	1	2	1	1	3	4	2	1	1
2	5	4	5	2	4	5	3	2	2	4
3	5	4	5	5	5	5	5	5	4	5
4	2	1	4	4	3	3	3	2	3	2
5	4	3	5	5	4	4	5	3	3	3
6	4	4	4	3	3	4	3	2	4	5
7	3	1	3	1	3	3	3	3	1	1
8	4	3	5	5	5	4	4	1	4	5
9	5	5	5	5	5	5	5	3	5	5
10	4	4	4	5	5	5	4	5	4	5

Survey	RACAP1	RACAP2	RACAP3	RACAP4	RACAP5	RACAP6	RACAP7	RACAP8	RACAP9	RACAP10
11	4	5	5	3	4	4	4	4	3	3
12	5	4	5	3	4	3	3	4	4	4
13	2	2	5	3	4	4	4	5	3	1
14	3	4	5	2	5	5	5	3	4	4
15	4	4	4	3	4	4	4	3	4	4
16	5	5	5	5	5	5	5	5	5	5
17	3	3	5	2	4	5	5	3	3	4
18	3	3	4	4	4	4	3	4	3	4
19	3	3	4	1	4	5	4	2	5	3
20	3	3	5	1	3	4	3	4	2	2
21	2	3	4	1	1	5	2	4	1	2
22	3	2	5	1	2	3	2	4	1	2
23	4	3	5	2	2	5	3	4	4	5
24	4	4	4	3	4	5	5	4	3	4
25	1	3	4	3	3	5	4	4	1	1
26	2	2	5	4	3	5	3	5	4	4
27	2	2	4	1	4	3	4	3	1	2
28	4	4	5	4	3	4	4	3	4	4
29	3	1	4	3	2	5	2	3	2	4
30	1	2	2	1	3	4	2	2	1	1
31	3	2	3	4	3	4	3	3	5	4
32	4	3	4	3	3	3	5	5	3	3
33	3	4	5	1	4	5	3	5	3	4
34	2	2	5	1	2	2	1	2	2	2
35	3	3	4	3	3	4	3	3	2	1
36	4	3	3	5	4	4	4	3	4	3
37	5	5	4	5	5	3	3	4	1	1
38	3	3	3	2	4	5	4	4	5	5
39	3	3	4	1	4	4	4	2	1	3
40	3	3	4	3	4	5	4	4	3	4
41	5	3	4	3	4	5	3	5	2	2
42	4	3	5	2	4	5	5	3	3	4
43	1	2	5	3	3	4	4	2	1	2
44	4	3	3	3	4	4	4	3	4	4
45	4	3	4	3	4	4	5	3	3	4
46	5	5	5	5	5	5	4	5	5	5
47	4	3	4	4	2	4	3	3	4	3
48	3	2	4	1	4	3	2	4	1	1
49	3	3	5	1	4	4	3	3	1	3
50	5	4	4	3	4	4	4	3	4	4
51	3	3	3	3	3	5	4	4	3	4
52	5	5	5	4	5	5	5	4	5	5

Survey	RACAP1	RACAP2	RACAP3	RACAP4	RACAP5	RACAP6	RACAP7	RACAP8	RACAP9	RACAP10
53	1	1	3	2	5	3	5	5	3	3
54	4	4	4	3	5	5	3	5	3	4
55	1	1	5	2	4	2	1	2	2	2
56	2	3	4	4	2	4	3	3	2	1
57	4	4	4	4	3	4	4	3	4	3
58	1	4	4	3	1	3	3	4	1	1
59	4	4	5	4	5	5	4	4	5	5
60	2	2	3	3	2	4	4	2	1	3
61	3	3	5	3	4	5	4	4	3	4
62	1	2	3	5	3	5	3	5	2	2
63	4	4	4	2	4	5	5	3	3	4
64	3	1	4	2	3	3	4	3	1	2
65	3	2	5	3	2	5	3	3	3	4
66	3	3	2	3	3	4	3	3	2	3
67	4	4	5	4	4	5	4	5	3	5
68	2	3	4	2	3	3	3	3	4	4
69	4	4	3	3	3	5	3	5	3	5
70	3	3	4	1	3	4	4	2	4	2
71	1	3	4	1	3	4	3	2	1	3
72	4	4	5	4	4	4	4	4	4	4
73	3	4	4	3	3	5	3	4	3	4
74	4	1	5	1	4	5	3	3	4	1
75	2	2	2	1	2	4	4	3	1	1
76	4	4	4	3	4	5	5	3	3	4
77	5	5	5	5	5	3	4	2	1	1
78	3	3	5	2	4	5	3	2	2	4
79	3	3	4	4	4	5	5	5	4	5
80	3	3	4	1	4	3	3	2	3	2
81	3	3	5	1	3	4	1	5	1	4
82	2	3	4	1	1	3	4	4	3	3
83	3	2	5	1	2	5	5	5	4	5
84	4	3	5	2	2	3	3	2	3	2
85	4	4	4	3	4	4	5	3	3	3
86	1	3	4	3	3	4	3	2	4	5
87	2	2	5	4	3	3	3	3	1	1
88	2	2	4	1	4	4	4	1	4	5
89	4	4	5	4	3	5	3	3	3	4
90	3	1	4	3	2	4	3	3	2	3
91	1	2	2	1	3	5	4	5	3	5
92	3	2	3	4	3	3	3	3	4	4
93	4	3	4	3	3	5	3	5	3	5
94	3	4	5	1	4	4	4	2	4	2

Survey	RACAP1	RACAP2	RACAP3	RACAP4	RACAP5	RACAP6	RACAP7	RACAP8	RACAP9	RACAP10
95	5	4	5	5	5	4	3	2	1	3
96	2	1	4	4	3	4	4	4	4	4
97	4	3	5	5	4	5	3	4	3	4
98	4	4	4	3	3	5	3	3	4	1
99	3	1	3	1	3	4	4	3	1	1
100	4	3	5	5	5	5	4	3	4	4
101	5	5	5	5	5	4	4	3	4	4
102	4	4	4	5	5	5	5	5	5	5
103	4	5	5	3	4	5	5	3	3	4
104	5	4	5	3	4	4	3	4	3	4
105	4	3	4	4	2	5	4	2	5	3
106	3	2	4	1	4	4	3	4	2	2
107	3	3	5	1	4	5	2	4	1	2
108	5	4	4	3	4	3	3	5	1	3
109	3	3	3	3	3	3	5	5	3	3
110	5	5	5	4	5	5	3	5	3	4
111	1	1	3	2	5	2	1	2	2	2
112	4	4	4	3	5	4	3	3	2	1
113	1	1	5	2	4	4	4	3	4	3
114	2	3	4	4	2	3	3	4	1	1
115	4	4	4	4	3	5	4	4	5	5
116	1	4	4	3	1	4	4	2	1	3
117	4	4	5	4	5	5	4	4	3	4
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119	3	3	5	3	4	5	5	3	3	4
120	1	2	3	5	3	3	5	5	3	3
121	4	4	4	2	4	5	3	5	3	4
122	3	1	4	2	3	2	1	2	2	2
123	3	2	5	3	2	4	3	3	2	1
124	3	3	2	3	3	4	4	3	4	3
125	3	3	4	1	3	3	3	4	1	1
126	1	3	4	1	3	5	4	4	5	5
127	4	4	5	4	4	4	4	2	1	3
128	3	4	4	3	3	5	4	4	3	4
129	4	1	5	1	4	5	3	5	2	2
130	4	5	5	3	4	5	5	3	3	4
131	4	4	5	4	5	5	4	4	3	4
132	4	4	4	5	5	5	5	5	5	5

Information Technology and Performance

Survey	IT 1	IT 2	IT 3	IT 4	IT 5	Per 1	Per 2	Per 3
1	5	5	4	4	4	3	3	4
2	4	5	4	5	3	2	2	3

Survey	IT 1	IT 2	IT 3	IT 4	IT 5	Per 1	Per 2	Per 3
3	2	1	2	2	1	1	2	2
4	5	5	3	5	2	4	3	5
5	1	1	1	1	1	2	2	3
6	2	1	1	3	1	1	1	3
7	1	4	4	1	3	4	4	4
8	1	3	4	1	2	3	3	5
9	2	4	4	1	4	4	4	5
10	2	5	5	2	4	4	5	5
11	4	4	3	4	2	2	2	5
12	4	5	3	4	1	2	1	2
13	2	2	3	1	2	3	5	4
14	3	5	1	1	5	4	4	4
15	1	1	1	3	1	3	2	3
16	3	3	5	1	5	3	4	4
17	3	5	3	1	5	5	5	5
18	3	4	1	2	2	4	4	4
19	2	5	5	3	4	5	5	5
20	4	4	5	1	2	3	4	5
21	4	2	2	2	3	3	3	4
22	2	5	1	1	1	5	5	5
23	5	3	3	4	3	5	3	4
24	5	4	4	3	4	3	3	4
25	4	4	4	3	2	3	4	5
26	5	3	2	4	1	4	4	4
27	4	5	5	4	1	5	4	5
28	3	5	4	3	1	3	3	4
29	3	1	1	2	2	1	2	3
30	2	4	1	1	1	3	4	4
31	1	5	4	5	1	5	4	2
32	3	5	4	1	1	4	4	5
33	4	2	1	1	1	2	1	2
34	3	3	1	4	1	2	2	3
35	2	1	1	3	1	2	2	3
36	5	1	1	4	1	2	2	4
37	2	1	1	2	1	2	3	2
38	2	4	4	3	1	3	3	3
39	4	4	4	4	3	3	4	4
40	2	3	2	1	2	3	3	3
41	5	5	2	5	2	4	3	4
42	5	1	1	4	1	1	1	2
43	4	1	1	3	2	3	3	4
44	4	3	1	2	2	4	3	3

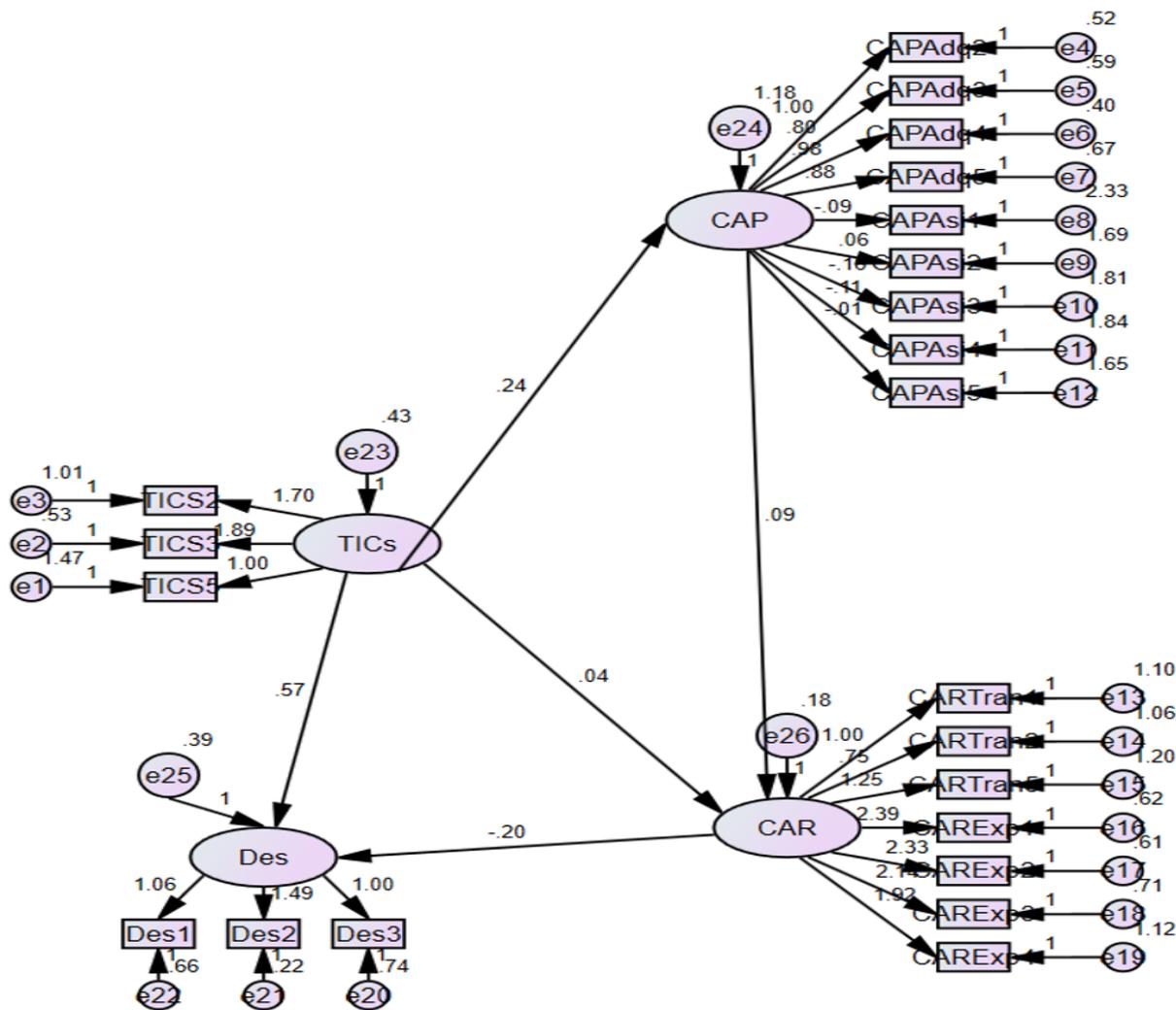
Survey	IT 1	IT 2	IT 3	IT 4	IT 5	Per 1	Per 2	Per 3
45	4	1	1	5	1	1	1	1
46	4	3	2	4	2	3	3	4
47	3	4	2	1	1	4	5	5
48	4	5	4	2	3	3	4	4
49	5	1	1	3	1	3	1	1
50	2	4	3	2	2	4	4	4
51	5	4	4	2	2	4	4	3
52	4	4	1	1	1	2	2	3
53	5	1	1	4	1	2	1	2
54	2	4	1	1	1	4	3	3
55	3	1	1	3	1	1	1	1
56	4	1	1	2	1	1	1	2
57	5	5	4	3	1	3	2	4
58	4	4	2	5	1	2	4	4
59	5	1	1	5	1	3	2	3
60	4	2	1	1	1	2	2	2
61	2	3	1	1	1	2	3	2
62	5	1	1	4	4	3	2	3
63	2	2	1	2	1	3	2	3
64	4	1	2	4	1	2	5	3
65	2	4	3	2	1	4	5	5
66	4	5	4	2	1	5	4	4
67	3	5	5	1	1	3	5	5
68	4	3	4	4	2	3	3	3
69	4	1	1	3	1	3	1	1
70	5	2	1	4	1	4	3	3
71	4	1	1	4	1	2	1	4
72	5	2	2	3	1	2	1	2
73	5	1	1	3	1	3	3	2
74	1	5	3	1	1	1	4	4
75	2	4	3	2	2	3	3	5
76	3	5	1	1	5	4	4	4
77	1	1	1	3	1	4	3	4
78	3	3	5	1	5	3	4	1
79	3	5	3	1	5	3	3	4
80	3	4	1	2	2	3	4	5
81	2	5	5	3	4	4	4	4
82	4	4	5	1	2	5	4	5
83	4	2	2	2	3	3	3	4
84	2	5	1	1	1	3	3	5
85	4	4	4	4	4	3	3	4
86	5	5	5	3	1	3	3	4

Survey	IT 1	IT 2	IT 3	IT 4	IT 5	Per 1	Per 2	Per 3
87	4	4	4	4	3	5	3	3
88	4	3	3	5	5	3	2	4
89	4	4	4	4	4	4	5	5
90	5	3	5	4	5	3	4	4
91	5	5	4	5	4	3	1	1
92	5	5	4	2	2	4	4	4
93	3	3	4	3	4	4	4	3
94	2	2	2	4	4	2	2	3
95	3	4	3	5	5	2	1	2
96	2	3	3	4	3	5	3	2
97	3	4	4	4	5	5	5	5
98	3	2	4	4	4	3	3	2
99	2	4	3	2	2	4	5	3
100	5	4	4	2	2	4	3	2
101	4	4	1	1	1	3	3	3
102	5	1	1	4	1	4	4	1
103	2	4	1	1	1	5	5	3
104	3	1	1	3	1	5	4	5
105	4	1	1	2	1	4	4	4
106	5	5	4	3	1	5	5	3
107	4	4	2	5	1	5	4	2
108	5	1	1	5	1	4	4	5
109	4	2	1	1	1	2	1	2
110	2	3	1	1	1	2	2	3
111	5	1	1	4	4	2	2	3
112	2	2	1	2	1	2	2	4
113	4	1	2	4	1	2	3	2
114	2	4	3	2	1	3	3	3
115	3	3	4	5	5	4	4	4
116	5	5	4	4	4	3	2	3
117	4	5	4	5	3	3	4	4
118	2	1	2	2	1	5	5	5
119	5	5	3	5	2	4	4	4
120	1	1	1	1	1	5	5	5
121	2	1	1	3	1	3	4	5
122	1	4	4	1	3	3	3	4
123	1	3	4	1	2	5	5	5
124	2	4	4	1	4	5	3	4
125	3	4	2	1	4	3	3	4
126	3	3	2	4	5	3	4	5
127	2	2	2	3	3	5	2	2
128	2	2	2	1	4	3	3	4

Survey	IT 1	IT 2	IT 3	IT 4	IT 5	Per 1	Per 2	Per 3
129	4	4	2	4	4	5	3	3
130	2	4	1	1	1	5	5	3
131	4	5	4	5	3	3	4	4
132	5	1	1	4	1	4	4	1

Annex 2

SEM Model (AMOS 24.0)



Final SEM model fit with final items