



## Effects of Employee Satisfaction on the relationship between IT Capability and Firm Performance

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### Abstract

It has been widely accepted that Information Technology (IT) within an organization plays a determinant role of positively influencing the firm's market performance. As technology becomes cheaper and more standardized, entry barriers to adopting advanced technology have been reduced. The adoption of such standardized and homogenous IT systems has lowered expectations of the competitive benefits resulting from the adopted IT. Thus, previous studies have shown mixed results in assessing the relationship between the adoption of IT and a firm's market performance.

Regarding the process of the adoption and use of IT, the skill level of employees has been argued as one of the key inputs to determine the relationship between IT and a firm's market performance. Employees may resist the changes resulting from modification of current IT or the adoption of new IT. In order to lower such resistance, firms should provide organizational environments which allow associated employees to be comfortable when changing IT systems.

Regarding the relationship between the IT resource and employees, previous studies have primarily focused on IT users. However, non-IT users are often affected by the use of IT. In this present study, we argue that all employees including both IT-users and non-IT users must be simultaneously considered in order to fully understand the relationship between IT capability and a firm's performance. Such a relationship is the result of a comfortable and cooperative environment, which is linked to employee satisfaction. Thus, we propose in this study that employee satisfaction including non-IT-users within the firm's environment positively affects the relationship between IT capability and firm market performance.

**Keywords:** IT Capability; Employee Satisfaction; Firm's Performance.

### 1. Introduction

Information Technology (IT) has been considered as a key tool for a firm's survival and growth. Various studies have presented the positive effects of IT on a firm's performance resulting from the improvement of the work process, productivity, profitability, and customer satisfaction.

However, some previous studies have not always shown the positive relationship between IT and firm's performance (Chae et al., 2014; Powell & Dent-Micallef, 1997). Some studies indicate mixed views regarding the relationship between IT and a firm's market performance. Based on the Resource Based View (RBV), Bharadwaj (2000) stated that a firm with higher IT capability outperforms other competitors in the perspective of profits and costs. Similarly, Sanders and Premus (2005) reported on the direct effects of IT capability on a firm's performance including cost, speed, and quality; moreover, IT capability was found to encourage both internal collaboration within a firm and external collaboration with business partners. Some scholars report that other factors need to be considered in explaining the relationship between IT capability and firm's performance, namely, business process agility (Chen et al., 2014), knowledge management (Tanriverdi, 2005), and internal management including process, customer, and performance (Mithas et al., 2011). On the other hand, Powell and Dent-Micallef (1997) concluded

that IT itself does not provide a firm with a competitive advantage, although it may offer other advantages. Chae et al. (2014) recently noted that the IT capability does not positively affect firm's performance.

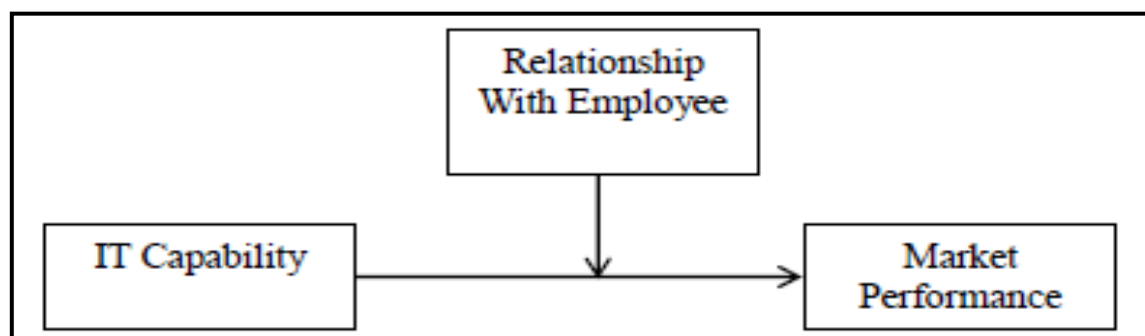
Compared to decades ago, current IT is more standardized and homogenous, and less expensive. Thus, entry barriers to adopting IT into an organization have been lowered. From the perspective of RBV, a company needs to possess valuable and scarce resources to have a competitive advantage. Hence, such lowered entry barriers inhibit the expectations of achieving a competitive advantage throughout the implementation of IT. Nevertheless, it is obvious that the effect of IT on a firm's performance is a key factor in differentiating a firm from its competitors.

In order to clearly identify the effects of IT on a firm's performance, many factors need to be considered (e.g. Tanriverdi, 2005; Mithas et al., 2011; Chen et al. 2014). Luna-Reyes et al. (2005) found that failure during information system development is often due to a lack of consideration of exclusive social and organizational factors, which includes people, work processes, and cultural factors and that hardware and software are just part of the socio-technical factors. Stoel and Muhanna (2009) argue that environmental factors including industry dynamism, enhancement, and complexity affected the firm's performance regarding IT capability. Moreover, the type of IT capability (i.e., internally-focused or externally-focused) should be incorporated into the business process which further affects the firm's market performance. Martinsons and Chong (1999) contend that a higher failure rate of IT implementation often results from nontechnical factors. They state that the human factor is a nontechnical factor which positively influences user satisfaction, organizational change, and productivity. In addition, Lam et al. (2007) suggest that employees' willingness, ability, and managers' support of human factors should not be overlooked for successful IT implementation. Navimipour and Soltani (2016) studied the effects of electronic customer relationship management (E-CRM). In their study, organizational structure, strategy, and flexibility positively affected employee satisfaction and performance of the E-CRM system. In an earlier study of the retail industry, Powell and Dent-Micallef (1997) found no clear relationship between IT and firm performance, which suggests that some companies obtained negative effects throughout IT implementation. One conclusion of their study is that human resources comprise a key factor in differentiating performance among retailers.

In this study, we argue that the level of the relationship between employees and a firm plays a moderating role between IT capability and firm's performance, as shown in Figure 1. Unlike previous studies in which only IT users were considered important resources for improved IT capability (eg. Chen and Tsou, 2012), this present study considers all human resources including IT user and non-IT users. These human resources influence the relationship between IT capability and a firm's performance.

Firms need to possess higher IT capability for IT resources to be fully reflected in firm performance. Bharadwaj (2000) defined IT capability as "the ability to mobilize and deploy IT-based resources in combination or co-present with other resources and capabilities." Sanders et al. (2005) define IT as the ability to "acquire, process, and transmit information for more effective decision-making." As a firm provides better benefits to satisfy employees within their working environments, the quality and speed of obtained information improves with implemented IT, which positively affects a firm's performance. This study provides IT practitioners and researchers with a different perspective of IT. Our results may assist in explaining why studies on the relationship between IT and firm performance have provided mixed results.

Figure 1: Research Model



## 2. Background Literature and Hypothesis

### 2. 1. The relationship between IT and Firm's performance

Regarding the relationship between IT and firm's market performance, many scholars have asserted that IT is one of the major resources to strengthen a firm's competence.

Bharadwaj (2000) considered the effective use of IT as a key organizational capability and showed that sampled firms with higher IT capability outperform controlled samples from the perspectives of profit and cost based measures. With regard to the positive association between IT capability and firm's performance, Santhanam and Hartono (2003) noted that IT capability provides a sustained impact on financial performance. In a similar vein, Sanders and Premus (2005) show the direct relationship between IT capability and a firm's performance in cost, product quality, and time. Ravichandran et al. (2005) revealed that the variation in firm performance is explained by the quality of IT support for a firm's core competencies which is dependent on IT capabilities. Furthermore, the level of such IT capabilities depends on resources which a firm possesses, including Information Systems skilled human resources, IT infrastructure flexibility, and internal and external partnership quality. Yongmei et al. (2005) consider IT capability as a moderator between IT investment and firm's performance.

Some scholars suggest that there are other mediating factors between IT and a firm's performance rather than the direct relationship between them. The study of Chen and Tsou (2012) in the service industry shows that the level of customer service plays a mediator role between IT capability and firm's performance and indicates that IT capability affects service process innovation which affects the level of customer service. A study by Yeh et al. (2012) shows that Information system capability at all levels of the company causes better IT strategy implementation process to be available, which results in the improvement of e-business performance. Chen et al. (2014) note that explaining the relationship between IT capability and a firm's performance requires a relationship with other factors; namely, business process agility as mediator and environmental factors as the moderator. Tanriverdi (2005) reports that IT facilitates knowledge management (KM) capability across business units. Such KM capability enhances the creation and exploitation of cross-unit synergies that improve firm performance. The relationship between IT and a firm's performance is indirect and KM capability plays a mediating role between them. In the study of Mithas et al. (2011) present that IT capability directly influences the firm's performance and indirectly affects one via the other three abilities to manage a firm's performance, customers, and processes. Thus, we suggest following proposition:

**Proposition 1: IT Capability is positively related to a firm's market performance.**

## **2.2. The Effect of Employee Satisfaction on the Relationship Between IT and Firm's Performance**

Employee satisfaction has been considered as one of the critical factors affecting a firm's performance. Regarding the relationship between human resource (HR) practices and IT, existing studies show that the relationship is not unidirectional. Regarding the effect of HR practice on IT, HR factors including HR policies and employee characteristics are drivers of technical innovations and a firm's decision about which technologies to adopt (Leonard-Barton & Deschamps, 1988; Ahuja & Thatcher, 2005). As for the effect of IT on HR practices, the adoption of IT changes the present firm's organizational routines, work processes and habits (Orlikowski et al., 1995).

Many scholars have argued that human resources factors of different levels should be considered in order to have better firm performance. Youndt et al. (1996) reported that the enhancement in human resources will positively affect the improvement of operational performance in productivity, efficiency, etc. Empowered employees with higher job satisfaction created an organizational climate being able to effectively attain goals in the external environments such as customer satisfaction (Ugboro & Obeng, 2000). Ahmed et al. (2013) argue that executive vision to support IT capital, human resource, training and security is essential to have a quality information system and that information system is one of the means for a firm to have competitive advantage. In a study associated with the health information technology, Khatri and Gupta (2016) found that proactive employee behavior induces the quality of patient care to be improved and that IT resources including IT staff skill levels and IT infrastructure support such employee efforts. Furthermore, the use of IT promotes horizontal coordination and interpersonal networks (Tafti et al., 2007). Soliman and Spooner (2000) noted that human resource management based on a mix of skills in working with tacit and explicit knowledge is a main resource for effective knowledge management; furthermore, information technology should facilitate knowledge sharing and accumulate trust among workers for productive knowledge management. Mithas et al. (2011) have shown that information management capability is positively associated with three capabilities including performance management capability, customer management capability, and process management capability. Hence, these three capabilities positively affect the improvement of human resource performance and firm performance.

The organizational transformation by the adoption of IT requires employees to be familiar with changing organizational forms including work processes and habits. Under such a transition, efforts of employees are required for expected improvements of performance to be emerged. The resistance against modified work environments endangers a firm's competitiveness as well as the relationship between management and the workforce (Zwick, 2002). Mitigating employee's potential resistance resulting from the adoption and use of IT causes expected performance via IT resources to occur by making a smooth transition. As employee satisfaction becomes higher, employee involvement in the firm's transition becomes smoother; hence, expected returns

throughout the use of IT resources will emerge. As an example, Lee and Lee (2004) report that change management to derive the effective adoption of ERP system affects the improvement of a firm's performance.

In the study of Sanders and Premus (2005), it is argued that IT is not synonymous with collaboration. Collaboration results from human interaction and is supported by IT. Also, the effects from internal and external collaboration improve firm performance. Antoncic and Antoncic (2011) suggest that improved employee satisfaction encourages information flows and collaborations among employees, which results in a utilized social network within a company. Creating higher human involvement interacts with IT capability, thereby resulting in better effects of collaboration by strengthening the speed and quality of shared information. Furthermore, higher employee satisfaction encourages useful information to be shared while strengthening collaboration among employees. Thus, synchronization between IT capability and higher employee satisfaction causes a firm's performance to have synergetic effects. Thus, we suggest the following proposition:

**Proposition 2: The performance of human resource management positively moderates the relationship between IT capability and a firm's market performance**

### 3. Conclusion

From this study, it is emphasized that employee satisfaction, as a non-technical factor, affects the relationship between IT capability and a firm's market performance. Most present studies have been conducted from the perspective of IT users in order to investigate the relationship between IT related resources, including IT capability and IT infrastructure and firm performance. When IT is adopted and used within an organization, it influences IT users directly and non-IT users indirectly. Rather than only considering the IT user perspective, involvement of the entire workforce needs to be extensively considered in order to understand the effects of IT on a firm's performance. Many studies have argued that IT capability is one of the key resources in differentiating among competitors' performance. However, such studies show diverse results and differing views of the relationship between IT capability and firm performance. In order to clearly describe such mixed results, many other resources must be considered. Many scholars have listed such factors, including IT infrastructure, corporate culture, training of IT staff, customer focused strategy, employee behaviors, etc.

There may some limitations for this study. In the case of employee satisfaction, some employees do not utilize any IT systems for their work. In this case, the measurement of such employees' satisfaction would ambiguously affect the relationship between IT capability and firm performance. Furthermore, in some industries, the intensity in the use of IT is not strong. In the case of such a firm or industry, the focus on the improvement of IT capability causes the investment of IT related resources to be wasted. One possible limitation is the length and quality for the achievement of better IT capability. The implementation of an IT system requires complicated processes to be involved. In this process, many employees are actually involved and longer implementation time would be needed. As the time in the implementation becomes shorter, potential shortcomings generated in consideration of extensive corporate environment are easily ignored. As another limitation, the corporate structure needs to be considered. One of the factors affecting the quality of IT capability is communication among employees. The corporate structure of some companies would be a closed structure by functional departments. Such a corporate structure focuses on particular functional departments rather than exclusive departmental functions. Leadership quality of top management also needs to be noted. Likewise, involvement of employee is facilitated by the support of top management. Even though IT capability via the use of highly skilled IT staff could be improved, the quality of top management determines the overall organizational environment which critically affects firm performance by influencing the perception of all employees. Thus, poor leadership quality in top management may result in poor market performance including customer satisfaction.

From this study, we consider the relationship between IT capability and a firm's market performance and argue that employee satisfaction plays a role as moderator between them. It is obvious that the focus on employee satisfaction would be one of the most important resources for a firm to have a competitive advantage. When employees have higher satisfaction, communication within a firm is more efficient and effective, which causes all organizational processes to be smooth. Ultimately, this leads to the improvement of firm's performance to be realized. This study contributes to the explanation of various relationships between IT capability and a firm's performance. Ideally, the propositions in this study will provide practitioners a chance to reconsider how to treat their employee for the achievement of better satisfaction along with IT investment. In sum, this study may provide researchers an opportunity to understand the relationship between IT and a firm's performance within a holistic view.

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