*Iranian Journal of Management Studies (IJMS)*
*Vol. 7, No. 1, January 2014*
*pp. 95-120*

# The impact of information technology capability on firm performance; a focus on employee-customer profit chain

***Ahmad Reza Karimi Mazidi*[*1], Alireza Amini [1], Meisam Latifi [2]***

*1. Ph.D. Student of Behavioral Management; Ferdowsi University of Mashhad; Faculty of Economic and Administrative Sciences*
*2. Assistant Professor of Industrial Management; Imam Sadiq (as) University; Faculty of Islamic Sciences and Management*

(Received: 9 December 2012; Revised: 20 June 2013; Accepted: 30 June 2013)

## Abstract

Employee-customer-profit(ECP) chain is one of the guidelines for organizations 'success in their life cycle. Strong relationships have been found between employees' attitudes and behaviors, employees' behaviors and customers' impressions, and customers' impressions and revenue growth. Out of this chain, there are some factors that can influence the processes through which these factors interact. One of these factors is information technology (IT) capability. In this research, we modeled the effect of IT capability on ECP chain using structural equation modeling (SEM). Service process innovation (SPI) was also used as a mediating variable between IT capability and ECP chain. This was accomplished based upon quantitative data gathered from a sample of 212 employees of the Technical and Vocational organization in Mashhad city. Results revealed a strong support for the proposed model. In particular, the association between IT capability and SPI with ECP chain and their leverage effect facilitate the organizations' movements along with the chain which was significantly confirmed.

## Keywords:

ECP Chain, Customer Services, Firm Performance, IT capability.

∗ Corresponding author; Tel:+989173160900 Email : alef.karimi@gmail.com

## Introduction

Investment in IT constitutes most of the organizations' budget, because It has been widely considered as a source of competitive advantage. Although the effectiveness of IT investments is not vacillated, the main concern of managers is to measure its payoff. Early researchers in the 1980s and 1990s had further investigation of the direct relationship between IT investments and firm performance that incidentally obtained contradictory results which has been called as "IT productivity paradox" (Brynjolfsson, 1993). Recently, researchers have adopted a better and broader insight on how and why IT affects organizations' performance and exploring this impact has become a trivial issue for improvement of the organizations' performance.

The resource-based view (RBV) of the firm is an important perspective to evaluate the firm's value in relation to IT (Bharadwaj, 2000). According to this theoretical perspective, only those resources lead to sustainable competitive advantage that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). The concept of IT capability that is the firm's capacity to effective deployment of IT-based resources was emphasized in dynamic capability perspective, which has evolved from the RBV (Ross *et al*., 1996). Therefore, IT capability stands between IT investments and firm's performance and then converts these organizational investments to a resource for sustainable competitive advantages. In addition, there are studies suggesting IT capability is a moderator rather than a mediator variable linking investment to firm performance (e.g., Liu *et al*., 2008). Regardless of mediating or moderating effects of IT capability, this study considers its association with ECP chain and investigates its impact on firm performance.

Customer services and consequently customer satisfaction are the

focus of ECP chain. Because of the ever-increasing importance of customer service , customer satisfaction and firm performance, customer relationships have become a critical asset for firms. The firms are shifting from a product- to a customer-centric model to meet customer demands and customer satisfaction that has emerged as a key metric for measuring the firms' competitive success (Anderson *et al*., 2004). Prior researches have indicated that high customer satisfaction has the potential to double or triple firms' profit and begun to examine how to use IT to manage customer service activities and reach customer satisfaction (Mithas *et al*., 2005a; Rechinhheld & Sasser, 1990; Rose, 1990). Nonetheless, few empirical studies have been done on how customer services lead to superior performance and how IT capability can strengthen this linkage within the ECP chain template. Thus, this study fills the gap in the relationship between IT capability and firm performance by demonstrating how IT capability interacts with the ECP chain and particularly how it affects customer services via the mediating variable of SPI. This mediating relationship is investigated towards understanding how IT capability and SPI can facilitate producing competitive customer services because it is essential to understand the association between IT capability, ECP chain, and in particular firm performance.

Our research is based on the study of Chen and Tsou (2012) and investigates the interactions between both the IT factors (IT capability) and organizational factors (SPI) with ECP chain. There are few studies on the role of SPI in facilitating customer services (Barney, 1991; Chen & Tsou, 2012) and this is one of the first ones to examine the IT capability association with ECP chain. To do so, we addressed the following questions: (a) How does IT capability associate with ECP chain? (b) How does IT capability affect employees' satisfaction? (c) How does SPI enable IT capability to improve customer services? (d) How does IT capability affect firm

performance? And (e) what are the performance consequences of IT capability- and innovative service process-enabled customer services? The remainder of the paper is comprised of the sections such as literature review, hypotheses development, methodology, data analysis and results, and final section of the paper discusses the normative imperatives for practice and concludes with a call for future researches.

## Literature Review

### IT capability

IT resources encompass IT infrastructure, human skills in working with IT, and organization's ability to manipulate IT, which combine to form an intangible resource called IT capability (Bharadwaj, 2000). This view of IT resources has received much support in the IT literature. According to Ross et al. (1996), IT capability is the ability to manage these three IT resources.The combination of these resources is a better resource to compete, or better say, is a competitive advantage. Resource-based view of IT suggests that firms can and do differentiate themselves from competitors by means of their IT resources (Chen & Tsou, 2012). On the other hand, while it is difficult to acquire or imitate each distinct IT resources, firms can achieve competitive advantage through learning to combine their existing IT resources effectively (Bharadwaj, 2000).

Concerning financial performance, fall in the cost of IT without developing Its capability would become a disadvantage. IT capability is required for synergistic operation of IT resources. This organizational capability is a hierarchy of ‘‘composite operant resources’’ (Chen & Tsou, 2012; Madhavaram & Hunt, 2008) and its constituents can be either tangible or intangible (Madhavaram& Hunt, 2008). So far, many researchers (e.g., Bassellier *et al*., 2003; Bharadwaj, 2000; Bhatt *et al*., 2005; Ross *et al*., 1996) have tried to

categorize IT resources and among them, some researchers like Chen and Thou (2012) attempted to integrate previous categorizations of IT resources. Their new scope of IT capability is comprised of four critical IT-based resources; IT infrastructure, IT human resources, IT related resources, and IT business experience. In this study, we also considered these four resources as the components of IT capability.

**Service process innovation**

Lee and Xon (1996) defined process innovation as the "development of a new way in which work is done within an organization through fundamental redesign of work" (p 545). And service processes is a sequence of activities for effective service functioning (Bitner *et al*., 2008). Thus, SPI requires changing both the service process and the design of service encounters (Hill *et al*., 2002). Silvestro *et al*. (1992) defined SPI as "the existence of the customer within the service process".The main stimulus for innovation in process is the cost effectiveness and an enabler is needed which is usually IT (Lee & Xon, 1996). SPIs are those services that support customer interfacing processes (Lyytinen& Rose, 2003) meaning that innovations in service process can improve services that leads to better customer service.

Fitzsimmons and Fitzsimmons (2000) have chosen a different way of looking at SPI and have considered SPI as knowledge management. They postulated that for clarifying of SPI in information- and knowledge-based services technically it should be undertaken as a knowledge management activity. Ruggles (1998) based on a process-based view of the firm identified four types of knowledge-based activities including sourcing, capturing, sharing, and evaluating. These activities about customer knowledge should be applied for innovative service process, because without customers, service process actually does not take place.

### Employee-Customer-Profit chain

The ECP chain is a theoretical concept and framework that links employees, customers, and firm performance. It is best exemplified by a case study entitled "The Employee-Customer-Profit Chain at Sears", which is expressed by Rucci *et al.* (1998) and postulates there are strong relationships between employees' attitudes and behaviors; employees' behaviors and customers' impressions; and customers' impressions and revenue growth.Notably, this theory is the sequence of Heskett *et al.*'s Service-Profit chain (1994) and in fact, they both attempt to investigate the relationship between employees' satisfaction and customers' satisfaction (referred to as the "satisfaction-mirror") and the relationship between customers' satisfaction and financial performance of an organization. Keeping employees satisfied has a great influence on customers' satisfaction and subsequently on firm's profitability.

This theory makes it possible to align HR strategy with business strategy, through employees' satisfaction. Gist of this theory is that keep your employees satisfied and they will make sure your customers are satisfied. However, it does not mean that if you focus on your employees' attitudes it is bound to lead to business performance improvements. Those human resource strategies that focus on employees' satisfaction appear to be the best human resources strategy but if not all links are present in this chain, there will be very little probability to achieve strategic goals.

## Conceptual Model and Hypotheses Development

### Employees' Satisfaction and Customer Services

Previous studies have suggested that there is a strong positive relationship between employees' satisfaction, customer services, and performance in both the manufacturing and service sectors (Brown & Lam, 2008; George, 1990; Harter *et al*., 2002; Johnson, 1996;

Reynierse & Harker, 1992; Schmit & Allscheid, 1995; Schneider *et al*., 1996; Schneider *et al*., 1998; Tornow & Wiley, 1991; Ulrich *et al*., 1991; Wiley, 1991). Employees that are satisfied and loyal, not only remain in their firm and increase its productivity, they also are the cause to customer retention. As suggested by Chi and Gursoy (2009) there is no direct significant relationship between employees' satisfaction and financial performance. In fact, the relationship between employees' satisfaction and financial performance is mediated by customers' satisfaction. Thus, the impact of employees' satisfaction with quality customer services is what every business owner has to understand, because customers and employees see things in similar ways (Feuss *et al*., 2004). As the sear's top managers found that employees' satisfaction predict the retail customers' satisfaction in their firm (Rucci *et al*., 1998).

By the same way, Lucent Technologies conducted a survey on employees and customers' satisfaction in 1998, and was determined while the relationship between employees and customers' perceptions is not strong all the time; they always display positive associations (Feuss *et al*., 2004). In other words, employees' satisfaction leads to their loyalty and commitment, which enhances customers' perceived quality of services and finally customers' satisfaction (Brown & Lam, 2008).

**$H_1$:** Employees' satisfaction will have a significant impact on customer services.

## Customer Services and Firm Performance

Numerous researchers have focused on organizational and behavioral consequences of customer services (e.g., Batt, 2002, 1999; Chen & Tsou, 2012; Cronin *et al*., 2000; Jones *et al*., 2003; Netemeyer *et al*., 2005; Sulek, 1995; Tracey, 1998; Vickery *et al*., 2003) and highlighted the impact of customers' satisfaction on firm performance.

Therefore, it is critical for organizations to understand and improve customer service quality. From service delivery perspective, superior service delivery has a positive impact on firm performance in relation to customers' satisfaction, customers' loyalty, brand image, return on assets (ROA), sales growth, market share and overall competitive position (Tracey & Tan, 2001).In addition, firms can improve their performance effectively by customization practices and minimizing customers waiting time-period (Rabinovich *et al*., 2003).Many studies have specifically focused on the relationship between customer services and profitability (Bernhardt *et al*., 2000; Brown & Chin, 2004; Hartline & Ferrell, 1996; Jones *et al*., 2003; Keiningham *et al*., 2006; Koys, 2001; Netemeyer *et al*., 2005; Payne & Webber, 2006; Schlesinger & Zornitsky, 1991; Silvestro & Cross, 2000; Tornow & Wiley, 1991). However, in this study other consequences of customer services such as customers' loyalty, market share and brand image have also taken into consideration. When customers are satisfied and become loyal, they will come back to the firm in the near future and recommend to their acquaintances to do the same. They actually are the cause of the firm's revenue to grow and improve profitability by retention, repurchase, and referral (Heskett *et al*., 1994).

If we replace the concept of “Firm performance” with its measure “Profitability” in ECP chain according to the financial and marketing literature, we can enrich the conceptual framework and investigate the relationship between customer services and firm performance. Profitability is an important determinant in the financial performance of organizations. We assume that the implementation of customer service practices is a possible determinant of overall firm performance. Thus, second hypothesis forms as following:

**$H_2$:**Customer services will have a significant impact on the improvement of the firm performance.

## IT capability and employees' satisfaction

Most researches about IT have traditionally focused on its ability to add economic value to the firm's products and services through differentiating. For instance, firms can offer various customized products and services with lower costs using IT capabilities such as customer relationship management (CRM) and customer knowledge management (CKM) systems (Karakostas *et al*., 2005). Nevertheless, if we turn our viewpoint from RBV, we would find that the IT capability also affects the employees' work life. The primary role of IT is monitoring employees electronically and controlling their operations (Schlesinger & Heskett, 1991); beside from the perspective of total quality management (TQM) it becomes a resource for employees to manipulate (Zuboff, 1988, as cited in Batt, 1999) that both of these cases affect the quality of employees' work life and subsequently their work attitudes and behaviors.

With IT systems, organizations face many new aspects of the work environment such as self-managed teams, process improvement, mobile working, organizational learning capability, and many more empirical evidences (e.g., Chiva & Alegre, 2009; Real *et al*., 2006) support this notion that there is a positive association between these new aspects, and employees' attitudes such as job satisfaction. Many organizational processes are also altered due to IT innovations in the workplace, which human resource management (HRM) components like payroll system, performance evaluation system, motivation, job design, and effective communications with employees are at the top of these changes. The results of a study for example indicated that individual autonomy and IT has a positive effect on wages (Hunter & Lafkas, 1998). On the other hand, Bharadwaj (2000) emphasizes on the importance of human capital enhancement such as technical and managerial IT skills for setting up IT systems. It seems that in the presence of IT capability, both the employees' working environment

and the manner that they are managed will be affected, because IT could help to evaluate employees' performance by increasing convenience and collecting performance information for management use. Thus, we postulate that IT capability would have a positive impact on employees' satisfaction.

**$H_3$:** IT capability will have a significant impact on employees' satisfaction.

### IT capability and firm performance

IT resources are comprised of three parts: (a) tangible resources comprising IT infrastructure, (b) human IT resources comprising technical and managerial IT skills, and (c) IT-enabled intangible resources like information management capability (Bharadwaj, 2000). While, the IT infrastructure is the foundation, information management has a more prominent impact on firm performance (Cotteleer & Bendoly, 2006). IT infrastructure capability has been specified in previous studies as an important determinant of firm performance and it approximately has become a trivial matter. However, what is most debated is that how IT capability affects firm performance.

While the customer-employee interaction is one dimension of service work, IT usage is a second factor affecting performance (Batt, 1999). Some studies (e.g., Mithas *et al*., 2005; Mithas *et al*., 2011) suggest that IT capability more affects the performance indirectly by mediation of other organizational capabilities like customer and market focus, performance management, and information management capability, although a direct relationship between IT capability and performance has been verified too. IT resources in combination create a firm-wide IT capability (Bharadwaj, 2000) that leads to competitive advantage and better firm performance by increasing its revenue and decreasing its costs. In general, the direct

relationship between IT capability and firm performance has been investigated in many studies (e.g., Bharadwaj, 2000; Lai *et al*., 2008; Ravarini, 2010; Santhanam & Hartono, 2003; Zhang, 2005) that led us to consider this relationship. We therefore hypothesize the following:

**$H_4$:**IT capability will have a significant impact on the improvement of the firm performance

**Mediating role of service process innovation**

Firms can achieve innovation in various processes from different ways like technology resources, knowledge, and relationship network (Chapman *et al*., 2003). Nowadays, the markets have become extremely competitive and it is not easy to compete for permanent and loyal customers and offering superior services in the presence of knowledge competitors. Firms should achieve competitive advantage through innovation in the service process, and one of the ways that makes it possible is IT capability.

Heskett et al. in their book namely *Service Breakthroughs* (1990), offered a model for the "people-service-profit chain" that specified how internal service quality leads to customer services, customers' satisfaction, and profitability; it is IT capability that cause of internal service quality. IT capability itself is a prominence and how to exploit it is more important. Skilled employees who have discretion in IT system utilization are likely to come up with innovations in the service process that improve service delivery and sales.

According to RBV, capabilities are potential resources that enable firms to differentiate their products or services and create economic value through the creation and implementation of strategies (Barney, 2002). A variety of products, lower prices, and personalized services are different instances (Chen & Tsou, 2012), entitled customer services improve firm performance. Firms should adopt relevant technologies to customize their services because of increasing

customers' demand for more diverse product/service offerings (Pine, 1993), and IT (e.g., CRM system) is one of these technologies for this purpose. It seems that IT capability leads to SPI by increasing convenience and collecting service performance information, and then it leads to better customer services by supporting service operations and offering extra services (Chen & Tsou, 2012). Thus, we postulate that IT capability will affect customer services via SPI. Based on the above discussion, we propose that:

**$H_5$:**SPI fully mediates the relationship between IT capability and customer services.

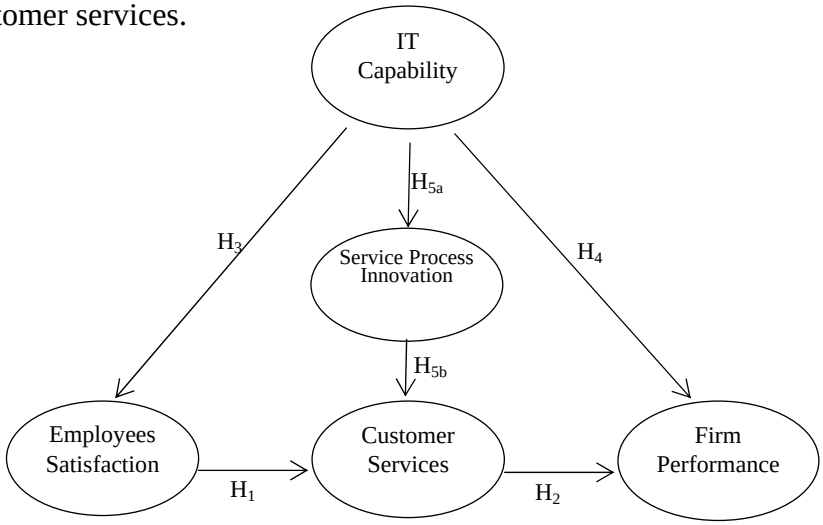


**Fig. 1. Conceptual model of IT capability & ECP chain**

## Method

This is a descriptive research in which we mainly pursuit to observe the influence of IT capability on ECP chain in the context of training institutions. We used the items of Chen and Tsou's (2012) questionnaire to measure the IT capability, SPI, and customer services, and the items of the Job Descriptive Index (JDI) adopted from Smith *et al*. (1969) were used to measure employees'

satisfaction. Due to the reluctance of firms to provide real information about performance, we followed the approach of Moorman and Rust (1999) and gathered the subjective perceptions of employees. Thereby, the firm performance was measured using five items by focusing on three subjective fields of financial, market, and customer performance. Finally, a questionnaire was designed involving semantic differential scales for JDI items and 5-point Likert-type scales for the other variables.

### Population, sample size and sampling method

Data was collected from employees of a Technical and Vocational (T&V) organization in city of Mashhad. As it is a service organization,it deals with IT, and SPI is largely the case.The sample size that was calculated by GPOWER Software consisted of 250 employees. T&V organization has seven offices in the city scope, then single-step cluster sampling method was used in order to research statistical sample represents the population properly. Therefore, each office was a cluster and each employee randomly was selected as a member of our sample.

## Results

Out of 250 questionnaires administrated, we received back 212 (85%) eligible responses. Then, they are our database for analysis in this research. 34.5% of the respondents were female and 65.5% were male. Mean age of respondents was 36.86 years and mean of their tenure was 12.16 years. Regarding education, 22.9% of the respondents had a diploma and less than diploma, 71.6% had a high diploma degree and Bachelor, and 5.5% higher.

## Measures'reliability and validity

According to early sampling, the reliability of the questionnaire was 0.954 that was a good reliability.After completion of data collection, the Cronbach's alpha coefficients were calculated for each scale that all exceeded the commonly accepted standard of 0.70. Table 1 shows the covariance matrix of study variables and internal consistency coefficients. To test the scales' construct validity, we conducted a confirmatory factor analysis (CFA) and analyzed the covariance matrix using the maximum likelihood procedure of SPSS Amos v.20. The result of fit indices in the measurement model revealed: $\chi^2$= 234.1, df=191, P=.018, GFI=.923, RMR=.048, NFI=.913, IFI=.983, CFI=.982, RMSEA=.033. Based on these findings, we conclude our questionnaire possesses construct validity.

**Table 1. Internal consistency of measures and correlation between variables**

| Variables | α | A | B | C | D | E |
|---|---|---|---|---|---|---|
| **A.** IT Capability | .853 | .456 | | | | |
| **B.** Service Process Innovation | .765 | .262 | .484 | | | |
| **C.** Employee Satisfaction | .946 | .194 | .186 | .427 | | |
| **D.** Customer Service | .814 | .242 | .295 | .184 | .462 | |
| **E.** Firm Performance | .795 | .250 | .317 | .227 | .231 | .497 |

## Hypotheses testing

In order to test the hypotheses,we combined the components of research model such as IT capability, SPI, employees' satisfaction, customer services, and firm performance to a structural model. The fit measures for SEM inform desirable indices ($\chi^2$= 177.264, df= 93, CFI=.946, GFI=.914, NFI=.895, IFI=.947, TLI=.922, RMR=.050, and RMSEA=.065). Figure 2 shows the overall SEM results along with standardized theoretical path coefficients.

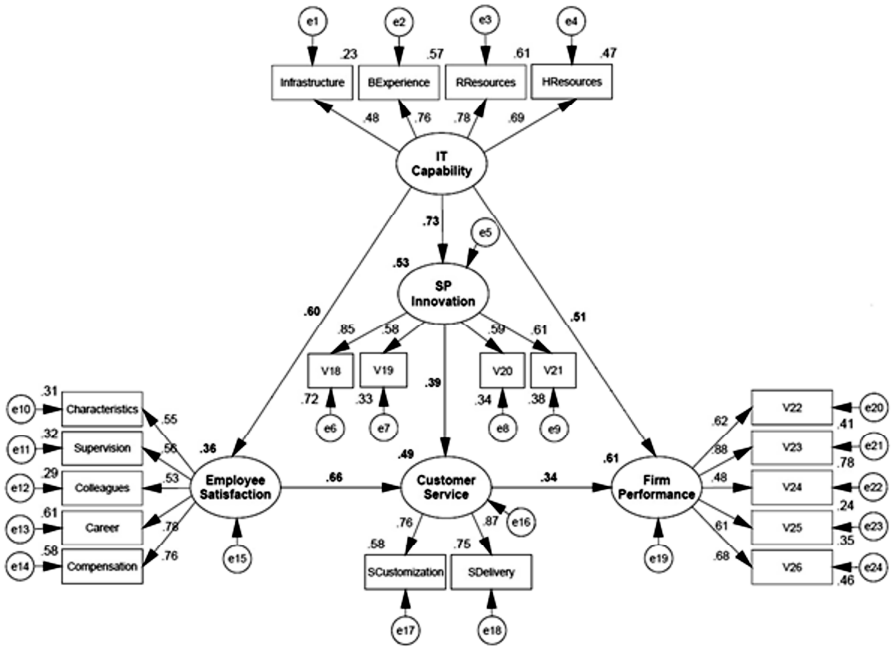


**Fig. 2. Accepted SEM along with standardized coefficients**

According to the relationships among variables in the final fitted model, the path from employees' job satisfaction to customer services has a significant coefficient that reveals positive effect of job satisfaction on customer services (β=.66, *P*=.002). Thus, first hypothesis is supported and we can say that firms with satisfied employees will provide better customer services. The second hypothesis predicts the positive impact of customer services on firm performance. We see in SEM that the coefficient of this path is .34 (*P* =.000). With regard to this significant coefficient, it is accepted that the greater the degree of customer service practices, the greater the firm performance will be. Thus, second hypothesis is supported. The estimated structural path between IT capability and employees' satisfaction was significant (β = .60, *P* =.000), thus hypothesis 3 is supported. IT capability also contributes to firm performance (β = .51,

*p* =.000).Then, hypothesis 4 is supported too. Finally, in order to examine that SPI fully mediates the relationship between IT capability and customer services, Baron and Kenny's (1986) procedure was applied. Accordingly, given the significant coefficient of the relationship between IT capability and SPI (β = .73, *P* =.000) and SPI and customer services (β = .39, *P* =.005)and a non-significant one between IT capability and customer services (β = .01, *P* =.989) in the main model,and significant coefficient of the direct relationship between IT capability and customer services in an alternative model (β = .47, *P* =.000) we can conclude that SPI fully mediates the relationship between IT capability and customer services. This means hypothesis 5 is also supported.

## Discussion

ECP chain is one of the managerial guidelines for organizations to reach better performance. Literature on business management emphasized that employees' satisfaction improves their services to the costumers, better performance, and pursuit higher profit for their businesses. This importance of ECP chain for organizations has led researchers to pay attention to the factors that affect the chain. We survey the influence of two of these factors including IT capability and SPI in this research. Our findings suggest that IT capability and all the three variables of ECP chain are correlated. More specifically, the relationship between IT capability and employees' satisfaction and firm performance is direct but SPI fully mediates the impact of IT capability on customer services. The results of this study about the relationship between each two variables are fully consistent with previous studies(see for example Brown & Lam, 2008; Chapman *et al*., 2003; Chen &Tsou, 2012; Chiva & Alegre, 2009; Keiningham *et al*., 2006; Mithas *et al*., 2011). Furthermore, the results indicated that the influence of IT capability on the beginning and end of the chain is

stronger, and the improvement focus of ECP chain is not a customer services but is on the employees' satisfaction. These results have significant implications for the ECP chain management and IT practices, which is needed for strategist managers to be focused on reach and better performance. This will be achieved using technological resources and organizational capabilities to satisfy employees, especially boundary employees.

The results of the present study contrary to most of the recent studies (e.g., Chen &Tsou, 2012) provide empirical evidence that IT capability should target at employees' issues (like employees' satisfaction) and yet, to serve the customers and satisfy them, employees are more important than IT capabilities. In fact, IT capability is more effective on employees than customers are and the effect of IT capability of customer services is indirect and less intense. An interesting result of examining the associated weights with the formative constructs of IT capability (i.e., infrastructure, business experience, related resources, and human resources) is that the IT infrastructure weight (0.48) in predicting IT capability is the lowest among the weights. Other IT capability indicators have almost the identical level of the prediction. However, IT related resources are relatively more influential than the others in the study context (0.78) suggesting the importance of not only employee empowerment and employing those applicants who have competence to communicate with IT-related resources, but also aligning and interaction of IT functions with departmental and business functions as facilitators of customer service practices. Further, the values of squared multiple correlation (SMC) of the model reports the predicting capability of employees' satisfaction about 36% and in general, about 61% of the variance independent variable i.e. firm performances are predictable by relationships that suggested in the model of this study. Thus, more attention should be given to ECP chain and the investment on IT-

related resources to improve this chain. It is highly desirable for increasing performance gains, and it seems that firms in this context i.e. service firms have to consider this component of IT-related resources more,

The direct relationship between IT capability and customer services was not statistically significant in the model and the results indicated that IT capability is an important predictor of SPI that has an impact on customer services and seems to be a critical mediator for satisfactory customer services. Indeed, innovation in service process is something that by means firms transform their IT-related resources into customer services and gain competitive advantage. In other words, a firm can strengthen its competitive advantages than the competitors by manifesting customer needs and demands in various options of service operations.

The statistically significantimpact of customer service on firm performance is the final determinant for indirect relationship between IT capability and firm performance. The coefficient for this path is 0.34 and is the weakest coefficient in the model. Maybe the reason for this low effect is the variables in the model mutually interact with each other and a significant part of the customer services impact on firm performance is applied through IT capability. Most likely, the main reason for the low impact is that the investigated context is in public sector and government-sponsored, and the performance of such organizations may not relate to their customers' satisfaction with the same intensity that exists for private organizations. The results further demonstrate that IT capability has a highly positive effect on firm performance ($R^2$= 0.26), indicating IT capability is a good indicator of how well a firm is obtaining/retaining its performance. Therefore, SPI and customer services both together partially mediate the relationship between IT capability and firm performance. In whole, the components of this model yield to predict performance with high power.

## Conclusion

The results of this study provide worth while insights for understanding the association of IT capability and ECP chain, extend earlier empirical findings that link IT capability with firm performance directly and indirectly, and open a new area in future researches on IT capability association with ECP chain.In this regard, we used SPI to link IT capability and customer services, but future researches may investigate a direct linkage between these two or replace a more effective construct to formulate this effect. Given the fact that no direct relationship there existed between IT capability and customer services in the current study, it could be a good idea to investigate the direct relationship between IT capability and ECP chain elements in other organizational contexts such as business organizations and manufacturing ones. In conclusion, this study is one of the first to provide empirical evidence for association of IT capability and all the elements of ECP chain, although one of the mentioned relationships was indirectly confirmed. Furthermore, we found out the improving focus of IT capability is on employees' satisfaction rather than be on customer services in ECP chain. Therefore, future researchers should reinstate this relatively surprising result of the current study.

At the end, few limitations should be considered in interpreting and generalizing the results of this study. We are not able to make causal conclusions and some of the relationships might be inflated or deflated because of the cross-sectional method of this study. However, we utilized the structural equation modeling to somewhat compensate the deficiency of research design. In addition, method variance is less likely to be a serious issue, because we used the various response formats in our questionnaire (Podsakoff *et al*., 2003). Another limitation of this study is related to understudy population, which probably limits the generalizability of results to service organizations

or even educational institutions. However, the results can be cautiously generalized to other types of service organizations due to the nature of IT capability, which is largely similar in different types of these organizations.

## References

Barney, J. B. (2002). *Gaining and sustaining competitive advantage* (2nd Ed.). New Jersey: Prentice-Hall, Upper Saddle River.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality & Social Psychology, 51, 1173-1182.

Bassellier, G., Benbasat, I., & Reich, B. H. (2003). The Influence of Business Managers' IT Competence on Championing IT. *Information Systems Research, 14* (4), 317-336. doi: 10.1287/isre.14.4.317.24899

Batt, R. (2002). Managing customer service: Human resource practices, quit rates, and sales growth. *Academy of management Journal, 45*, 587-597.

Batt, R. (1999). Work organization, technology, and performance in customer service and sales. *Industrial and Labor Relations Review, 52*, 539-534.

Bernhardt, K. L., Donthu, N., & Kennett, P. A. (2000). A Longitudinal Analysis of Satisfaction and Profitability. *Journal of Business Research, 47* (2), 161-171. doi: 10.1016/s0148-2963(98)00042-3

Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and firm performance: an empirical investigation. *MIS quarterly, 24* (1), 169-196.

Bhatt, G. D., Grover, V., & GROVER, V. (2005). Types of information technology capabilities and their role in competitive advantage: An empirical study. *Journal of Management Information Systems, 22* (2), 253-277.

Bitner, M. J., Ostrom, A. L., & Morgan, F. N. (2008). Service blueprinting: A practical technique for service innovation. *California management review, 50* (3), 66-94.

Brown, S. P., & Chin, W. W. (2004). Satisfying and Retaining Customers through Independent Service Representatives. *Decision Sciences, 35* (3), 527-550. doi: 10.1111/j.0011-7315.2004.02534.x

Brown, S. P., & Lam, S. K. (2008). A Meta-Analysis of Relationships Linking Employee Satisfaction to Customer Responses. *Journal of Retailing, 84* (3), 243-255. doi: 10.1016/j.jretai.2008.06.001

Chapman, R. L., Soosay, C., &Kandampully, J. (2003). Innovation in logistic services and the new business model: a conceptual framework. *International Journal of Physical Distribution & Logistics Management, 33* (7), 630-650.

Chen, J.-S., &Tsou, H.-T. (2012). Performance effects of IT capability, service process innovation, and the mediating role of customer service. *Journal of Engineering and Technology Management, 29* (1), 71-94. doi: 10.1016/j.jengtecman.2011.09.007

Chi, C. G., &Gursoy, D. (2009). Employee satisfaction, customer satisfaction, and financial performance: An empirical examination. *International Journal of Hospitality Management, 28* (2), 245-253. doi: 10.1016/j.ijhm.2008.08.003

Chiva, R., &Alegre, J. (2009). Organizational Learning Capability and Job Satisfaction: an Empirical Assessment in the Ceramic Tile Industry. *British Journal of Management, 20* (3), 323-340. doi: 10.1111/j.1467-8551.2008.00586.x

Cotteleer, M. J., &Bendoly, E. (2006). Order Lead-time Improvement Following Enterprise-IT Implementation: An Empirical Study. *MIS Quarterly, 30* (3), 643-660.

Cronin Jr, J. J., Brady, M. K., &Hult, G. T. M. (2000). Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of Retailing, 76* (2), 193-218. doi: 10.1016/s0022-4359(00)00028-2

Feuss, W. J., Harmon, J., Wirtenberg, J., &Wides, J. (2004). Linking employees, customers, and financial performance in organizations. *Journal of cost management, 18* (1), 12-23.

Fitzsimmons, J. A., & Fitzsimmons, M. J. (2000). *New Service Development: Creating Memorable Experiences* : Sage Publications.

George, W. R. (1990). Internal marketing and organizational behavior: a partnership in developing customer-conscious employees at every level. *Journal of Business Research, 20* (1), 63-70.

Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology, 87* (2), 268-279.

Hartline, M. D., & Ferrell, O. C. (1996). The management of customer-contact service employees: an empirical investigation. *Journal of Marketing, 60* (4), 52-70.

Heskett, I. L., Iones, T. O., Loveman, G. W., &Sasser, W. E. (1994). Putting the Service-Profit Chain to Work. *Harvard Business Review, March-April*, 164-174.

Hill, A. V., Collier, D. A., Froehle, C. M., Goodale, J. C., Metters, R. D., &Verma, R. (2002). Research opportunities in service process design. *Journal of Operations M anagement, 20*(2), 189-202. doi: 10.1016/s0272-6963(01)00092-4

Hunter, L. W., &Lafkas, J. J. (1998). *Information, Technology, W ork Practices and Wages.* Paper presented at the Proceedings of the 50th Annual Meeting of the Industrial Relations Research Association, Madison, Wisc: IRRA.

Johnson, J. W. (1996). Linking Employee Perceptions of Service Climate to Customer Satisfaction. *Personnel Psychology, 49* (4), 831-851. doi: 10.1111/j.1744-6570.1996.tb02451.x

Jones, E., Busch, P., &Dacin, P. (2003). Firm market orientation and salesperson customer orientation: interpersonal and intrapersonal influences on customer service and retention in business-to-business buyer–seller relationships. *Journal of Business Research, 56* (4), 323-340. doi: 10.1016/s0148-2963(02)00444-7

Karakostas, B., Kardaras, D., & Papathanassiou, E. (2005). The state of CRM adoption by the financial services in the UK: an empirical investigation. *Information & Management, 42* (6), 853-863. doi: 10.1016/j.im.2004.08.006

Keiningham, T. L., Aksoy, L., Daly, R. M., Perrier, K., &Solom, A. (2006). Reexamining the link between employee satisfaction and store performance in a retail environment. *International Journal of Service Industry Management, 18* (1), 51-57.

Koys, D. J. (2001). The Effects of Employee Satisfaction, Organizational Citizenship Behavior, and Turnover on Organizational Effectiveness: A Unit-Level, Longitudinal Study. *Personnel Psychology, 54* (1), 101-114. doi: 10.1111/j.1744-6570.2001.tb00087.x

Lai, F., Li, D., Wang, Q., & Zhao, X. (2008). The Information Technology Capability of Third-party Logistics Providers: A Resource-based View and Empirical Evidence from China. *Journal of Supply Chain Management, 44*(3), 22-38. doi: 10.1111/j.1745-493X. 2008.00064.x

Lee, J. S., &Xon, Y. X. (1996). A customer service process innovation using the integration of data base and case base. *Expert Systems with Applications, 11* (4), 543-552. doi: 10.1016/s0957-4174(96)00070-x

Lyytinen, K., & Rose, G. M. (2003). The disruptive nature of information technology innovations: the case of internet computing in systems development organizations. *MIS quarterly, 27* (4), 557-595.

Madhavaram, S., & Hunt, S. (2008). The service-dominant logic and a hierarchy of operant resources: developing masterful operant resources and implications for marketing strategy. *Journal of the Academy of M arketing Science, 36* (1), 67-82. doi: 10.1007/ s11747 -007-0063-z

Mithas, S., Ramasubbu, N., Krishnan, M., &Sambamurthy, V. (2005). Information technology infrastructure capability and firm performance: An empirical analysis. Working paper, Ross School of Business, University of Michigan, Ann Arbor.

Mithas, S., Ramasubbu, N., &Sambamurthy, V. (2011). How information management capability influences firm performance. *MIS quarterly, 35* (1), 237-256.

Moorman, C., & Rust, R. T. (1999).The role of marketing.*The Journal of Marketing, 63*, 180-197.

Netemeyer, R. G., Maxham III, J. G., &Pullig, C. (2005). Conflicts in the work-family interface: Links to job stress, customer service employee performance, and customer purchase intent. *Journal of Marketing, 69* (2), 130-143.

Payne, S. C., & Webber, S. S. (2006). Effects of service provider attitudes and employment status on citizenship behaviors and customers' attitudes and loyalty behavior. *Journal of Applied Psychology, 91*(2), 365-378.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., &Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88* (5), 879-903.

Rabinovich, E., Dresner, M. E., & Evers, P. T. (2003). Assessing the effects of operational processes and information systems on inventory performance. *Journal of Operations M anagement, 21* (1), 63-80. doi: 10.1016/s0272-6963(02)00041-4

Ravarini, A. (2010). *Information technology capability within small-medium enterprises.* (Doctoral Dissertation), Edith Cowan University, Perth, Australia.

Real, J. C., Leal, A., &Roldán, J. L. (2006). Information technology as a determinant of organizational learning and technological distinctive competencies. *Industrial Marketing Management, 35* (4), 505-521. doi: 10.1016/j.indmarman.2005.05.004

Reynierse, J. H., &Harker, J. B. (1992). Employee and customer perceptions of service in banks: Teller and customer service representative ratings. *Human Resource Planning, 15* (4), 31-46.

Ross, J. W., Beath, C. M., & Goodhue, D. L. (1996). Develop long-term competitiveness through IT assets. *Sloan Management Review, 38* (1), 31-42.

Rucci, A. J., Kirn, S. P., & Quinn, R. T. (1998). The employee-customer-profit chain at Sears. *Harvard Business Review, January-February*, 82-98.

Ruggles, R. (1998). The state of the notion: Knowledge Management in Practice. *California management review, 40* (3), 80-89.

Santhanam, R., & Hartono, E. (2003). Issues in linking information technology capability to firm performance. *MIS quarterly, 27* (1), 125-153.

schlesinger, L., &Heskett, J. (1991). Breaking the cycle of failure in services. *Sloan Management Review, 32* (Spring), 17-28.

Schlesinger, L. A., &Zornitsky, J. (1991). Job satisfaction, service capability, and customer satisfaction: An examination of linkages and management implications. *Human Resource Planning, 14* (2), 141-149.

Schmit, M. J., &Allscheid, S. P. (1995). Employee Attitudes and Customer Satisfaction: Making Theoretical and Empirical Connections. *Personnel Psychology, 48* (3), 521-536. doi: 10.1111/j.1744-6570.1995.tb01768.x

Schneider, B., Ashworth, S. D., Higgs, A. C., & Carr, L. (1996). Design, validity, and use of strategically focused employee attitude surveys. *Personnel Psychology, 49* (3), 695-705.

Schneider, B., White, S. S., & Paul, M. C. (1998). Linking service climate and customer perceptions of service quality: Tests of a causal model. *Journal of applied Psychology, 83*(2), 150-163.

Silvestro, R., & Cross, S. (2000). Applying the service profit chain in a retail environment: Challenging the "satisfaction mirror". *International Journal of Service Industry Management, 11*(3), 244-268.

Silvestro, R., Fitzgerald, L., Johnston, R., & Voss, C. (1992). Towards a classification of service processes. *International Journal of Service Industry Management, 3* (3), 62-75. doi: 10.1108/ 09564239 21001 5175

Smith, P.C., L.M. Kendall, and C.L. Hulin (1969). The Measurement of Satisfaction in Work and Retirement. Chicago: Rand McNally.

Sulek, J. M., Lind, M. R., &Marucheck, A. S. (1995). The impact of a customer service intervention and facility design on firm performance. *Management Science, 41* (11), 1763-1773.

Tornow, W. W., & Wiley, J. W. (1991). Service quality and management practices: A look at employee attitudes, customer satisfaction, and bottom-line consequences. *Human Resource Planning, 14* (2), 105-115.

Tracey, M., & Tan, C. L. (2001). Empirical analysis of supplier selection and involvement, customer satisfaction, and firm performance. *Supply Chain Management: An International Journal, 6*(4), 174-188.

Tracey, M. (1998). The importance of logistics efficiency to customer service and firm performance. *International Journal of Logistics Management, 9* (2), 65-81.

Ulrich, D., Halbrook, R., Meder, D., Stuchlik, M., & Thorpe, S. (1991). Employee and customer attachment: Synergies for competitive advantage. *Human Resource Planning, 14*(2), 89-103.

Vickery, S. K., Jayaram, J., Droge, C., &Calantone, R. (2003). The effects of an integrative supply chain strategy on customer service and financial performance: an analysis of direct versus indirect relationships. *Journal of Operations Management, 21* (5), 523-539. doi: 10.1016/j.jom.2003.02.002

Wiley, J. W. (1991). Customer satisfaction: A supportive work environment and its financial cost. *Human Resource Planning, 14* (2), 117-127.

Zhang, M. (2005). *Information technology capability, organizational culture, and export performance.* (Doctoral Dissertation), Washington State University, Washingt