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INFORMATION TECHNOLOGY COMPETENCE, PROCESS MANAGEMENT AND KNOWLEDGE MANAGEMENT: A CASE OF MANUFACTURING FIRMS OF VIETNAM

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ABSTRACT

Objective: The current study has aimed to examine the aspect of knowledge management by including various variables named as process management and information technology competence.

Methodology: This study was based on positivism philosophy and also the deductive approach was used in order to develop hypothesis. The data was gathered via quantitative manner. Also, target population was based on manufacturing firms located in Vietnam. The respondents were selected using convenience sampling and the final sample size was 191 responses.

Findings: The results indicated that IT competence was positively and significantly affecting the process management. Also, process management was positively and significantly affecting the knowledge management. It also showed that the process management was positively and significantly mediating the relationship between IT competence and knowledge management.

Managerial Implications: For executives, it has been deemed important to know the impact on better performance by IT should be direct; it must impose its effect through the usage of other methods like QM. The advantages of IT also rely on the IT conveying the capacity of the company to obtain, create and use its resources of IT in order to support the strategy of organization.

Keywords: IT Competence, Process Management, Knowledge Management, Vietnam, Manufacturing Sector.

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INTRODUCTION

The skills of organizations to get markets and customer related information can improve predisposition of firms to bring some changes in the environment and then to develop their competitive edge against the competitors who do not have complete information and they are slow in this adoption (Barney, 2001). Thus, most of the organizations have started formatting some strategies related to their IT sector since it helps to get and use the required data (Mata, Fuerst, & Barney, 1995; Tippins & Sohi, 2003). Despite increasing educational and functional interest in knowing how IT can sustain competitive edge Pavlou and El Sawy (2006), there is no clear vision of the methods through which IT effects enhances company approach or efficiency (Aragón-Correa & Sharma, 2003; A. Lee, Jung, & Malkin, 2008). Study has visualized only the IT as a good source when it is compared with other available resource of the company (Jarvenpaa & Leidner, 1998; Powell & Dent- Micallef, 1997). The review of the literature reveals that IT sector develops other operations of a business too like it brings organizational society. Still there is a very limite research on the ways through which the resources of IT can be used with other organizational and human resources (Nevo & Wade, 2010; Ravichandran, Lertwongsatien, & Lertwongsatien, 2005; Wade & Hulland, 2004). Past research also shows that surveys conducted to examine IT do not take into account the IT effects.

Given the technical, economic, technical, and ecological changes that have taken place for the last few years, the capacity of an organization to obtain and maintain competitive edge is a true dispute (Cancino, La Paz, Ramaprasad, & Syn, 2018). Not only did such alterations result to more consumer choices, but they also changed their priorities and desires (E. Habib, Deshotel, Lai, & Miller, 2019). In addition, the increasing awareness of consumers about diminishing resources such as air, water and land pollution X. Li et al. (2018) , and earth's climate variation are encouraging companies to develop environmentally friendly methods and minimize their dependence on renewable energy resulting in environmental vulnerability (Xiang et al., 2018). In this era, organizations that are dynamic in nature, chose to get different strategies simultaneously and promote their primary strategy with consequent methods Yusr, Mokhtar, Othman, and Sulaiman (2017) so that would be able to gain the objective of sustainability (SD) effectively and efficiently (Abbas, 2020). The predominant competitive market industry, strict environmental laws, and enhanced consumer issues regarding the characteristics and quality of the organizational products for following the techniques that have already been developed in terms of usefulness, such as total quality assurance (TQA) and the management of information (Abbas & Sağsan, 2019). TQM has been widely known as a mechanism capable of improving the institution and individual achievement Mahmood, Qureshi, and Nisar (2014) and improving competitive edge (X. Li et al., 2018). It does not only increases productivity for companies but also it improves the fulfillment of customers and staff (Shafiq, Lasrado, & Hafeez, 2019). TQM works to use the practices that are eco-friendly by using minimum resources in activities due to its emphasis on constant improvement (Qasrawi, Almahamid, & Qasrawi, 2017). In addition, effective execution of TQM has a major impact on the green technology of companies X. Li et al. (2018), which is a crucial sustainable development factor (Yu & Huo, 2019). Xie, Huo, and Zou (2019) said that organizations can introduce environmentally friendly goods or services by focusing on procedures (one of the major

components of TQM). Tseng and Bui (2017) said sustainable development in supply chain management can be achieved through efficient KM organizations. Industrial organizations are quickly consuming natural resources to produce different products and provide services to people to optimize their revenue. Unlike the service sector, the manufacturing sector absorbed more natural resources and triggered more pollution to the atmosphere, especially sewage and air pollution (Yuan & Xiang, 2018). This constant process has led to a steady rise in the temperature of the earth and a decrease in natural resource. In view of this problem, a number of individuals, such as environmental activists and international organizations, have begun to raise their voices in order to raise awareness of environmental issues and decrease natural resources, resulting in substantial pressure on companies to follow SD activities and become SD techniques and increasing social responsibility (Cai & Li, 2018). The extremely competitive company industries, together with the stress from shareholders, also push organizations to guide their activities towards sustainable development, standardization and reduced costs (Lucas, Southgate, & Tucker, 2019). RBV provides a theoretical basis for clarifying the engagement between TQM and organization's efficiency (Li, Laux, & Antony, 2018). This reasoning is based on the idea that TQM tends to enhance the performance of the company by promoting the development of particular assets rooted in the culture of the company, creating a culturally multilayered relationship and generating awareness. These features contribute to situations which allow companies to accomplish sustainable development and competitive edge, as per RBV. These strategies in the production and service sectors are vitally important (Albzeirat, Hussain, Ahmad, Al-Saraireh, & Ahmad, 2018). From the point of view of green organization it is crucial for an organization to solve all three elements of sustainable development (Calza et al., 2017). Those organizations that spend in SD procedures knowledge enhanced operational efficiency, have more loyal clients and become more efficient in their processes (Singh, Gunasekaran, & Kumar, 2018).

Therefore the effect of IT expertise Tippins and Sohi (2003) or Information management Strategy Chen, Cheng, and Hsieh (2010) on the multiple organizational resources should be developed and studied. It is necessary to establish a very well-structured set of competencies current in the commercial area when evaluating the interdependence of IT expertise with other organizational resources and methods. According to that, the quality management (QM) provides the most commonly used and excellently-established sets of organizational methods linked to business management in companies (Sousa & Voss, 2002). The review of the literature shows that QM plays a key role in enhancing the leading position of the company (Reed et al., 2000).

Developing an IT expertise will thus increase the Pearson, McCahon, and Hightower (1995) of QM procedures, allowing companies to accomplish a great competitive role. Various studies shown the association between the two variables. Mata et al. (1995) define a conceptual model to examine the effect on achievement in implementing QM methods of a set of IT instruments present within the firm.

This study's major limitation is that it describes IT as unlawful possession of those techniques. Forza (1995) results of main statistical study to study the association between the QM and IT reveals no findings for the association between the studied variables. The research also gives a technological IT related notion. The study showed that research of association among QM and IT factors have to be focused in the future.

Another current study can differentiate related to Martínez-Ferrero, Garcia- Sanchez, and Cuadrado- Ballesteros (2015), whose data shows a beneficial and important IT-relationship. However, here too the definition of IT restricts the extent to which hardware, software and the infrastructure of communication are used in a company. Finally, a study by focused on IT competency consisting technology, the managerial and technical expertise of IT, and IT assimilation with the company's approach. This study found that IT expertise affects quality performance favorably and substantially but does not identify its impact on the procedures of QM.

Thus, this study aims to find out a detailed understanding of important concepts of the IT competencies related with other sources and methods of organizations that are significant in the companies, like QM. This research examines effects of competency of IT on QM usage, finding out the execution as QM methods that are used. In the following research initiatives, we give this objective concrete form: (a) to assess the idea of IT expertise based on a comprehensive study, and (b) to investigate the effects study the impact of expertise of IT on QM usage as studies through different observance (management, consumer emphasis, advice and information, management of human resources, supervision and the management of process).

The major work of this study is that it works on the development of empirical study related to the main factors of IT with other resources of the organization. The used model of this study gives us a framework to study the level of approach of IT that affects methods of QM. Further this study confirms the empirical identification to study variious IT expertise related faces, providing a new information of the academics to study. The research also provides information for organizational training by enhancing current knowledge of a system effectiveness of QM. The significant and positive impact of IT expertise on different procedures of QM ensures the QM program will be more efficient. his variable's conceptual frameworks. We also convey the need for executives not to restrict themselves to merely investing in IT facilities, but to create a set of IT-related abilities to promote other organizational methods to build up.

To achieve those goals, the following paragraph introduces a conceptual evaluation of the research factors, and also the explanation of the various theories that provide solid form to our target. The segment on methods describes the research methods, the source of the selected measures, their features, and the research qualities that is carried out. The theoretical framework, after analysis, suggested in the segment on discussion and debate, the last section summarizes the study's key inferences, as well as the constraints and consequences (e.g. academic and functional).

LITERATURE AND HYPOTHESES DEVELOPMENT

Competence of IT

The ability or expertise of IT literary works examines the presence of multiple IT-related resources, whose combination consists of useful, inimitable, and un-substitutable IT competencies or capabilities. From this point of view, researchers show the capacity of IT as the skill to assemble and utilize the IT-based resources by combining or coexisting in the company with other resources and abilities. For Tippins and Sohi (2003), IT expertise reflects the level to which a company holds IT understanding and makes efficient use of it to handle the data produced within the company. In other words, the various dimensions of the ''IT expertise'' construction, which consists of information management of IT, IT facilities and activities of IT, are the specialized form of resources that represent organizational capacity to

comprehend and utilize the tools of IT and required technologies that are needed to manage industry and consumer data. Bharadwaj (2000) try to define IT ability as the ability of the company to obtain, create, and use its resources of IT to evaluate and for the promotion of its strategic plans.

Chen et al. (2010)'s study using a unique method to study IT skills, relating with the concept of "Information management Approach". However, this research relies only on how to handle such an approach. The researchers describe a paradigm that deems tactical IT management by: IT use to maintain company approach, IT structure preparing and shared organizational sight of the data system. Its concept does not take into account the technical or IT structure and and administrative understanding in IT.

The IT technology involves the various software, hardware, shared technology facilities, etc. for data management, as well as the particular business applications used by this facilities (Broadbent & Weill, 1997; Melville, Kraemer, & Gurbaxani, 2004). The adaptability of an IT structure promotes the usage and development of applications related to IT, improves the capacity of the company to answer some specific and arising possibilities and neutralizes probable threats (Ray, Muhanna, & Barney, 2005). The expertise of IT -how relates to understand necessary for incorporating the IT programs that use technology.

Mata et al. (1995) determine such elements as understanding of the programming languages, software experiences and interaction procedure knowledge. Tippins and Sohi (2003) conceive of this metric as the level that a company has some technical expertise related to the implementation of IT like the computation systems. Ravichandran et al. (2005) examine both the soft skills and the IT human asset accuracy.

On the other side, Melville et al. (2004) revealed that management of IT understanding should involve the skills to correctly recognize and intend projects of IT, assign limited resources, specific and inspire team growth to enforce various projects and encourage cooperation with other business segments. Mata et al. (1995) conceptualize of these abilities as the ability of the management in conceiving, developing and exploiting IT programs that promote the application of other tasks. Thus, these researchers suggest that organizational knowledge involves not only predicting the organization's long term IT needs, but also considering elements linked with the development of management system in the perception of a company and use it as an agent of the coordinator's work both Lastly, IT is used not only to obtain, store, and evaluate the company's derived data Tippins and Sohi (2003), which is given through the application of IT, but also to involve growth approach of the company (Ross, Beath, & Goodhue, 1996).within and outside the company. In addition to using IT properly from a strategic perspective, it is important that should be an association between the IT in-charge, its customers and the management that enable conversation. Thus all business lines then have to implement the organizational data system.

Quality management practices and IT competence

QM is known as the ideology of management which aims achievement through constant improvement and concentrate on consumers. This ideology takes tangible shape in some values that are based on the methods and ides (Dean Jr & Bowen, 1994). Another study found that the study of QM should be on the basis of the analysis of a set of ideas at the quantitative level, since performance concepts are too specific for empirical studies and methods too comprehensive to produce meaningful outcomes. QM methods have been extensively investigated, and the consequent data is purified, among others. Both surveys demonstrate the presence of seven methods for the implementation and evaluation of QM: management, management, consumer concentrate, management of human resources, advice and information, controlling process and the management of vendor. Such methods develop a QM structure to study in the heavy-research-impact publications (Kaynak, 2003; Prajogo & Sohal, 2003, 2006; Samson & Terziovski, 1999; Sila, 2007).

The first IT and QM literature takes IT to mediate the implementation of a program of QM (Konstadt, 1990). This study takes IT from its technical perspective, as the resources to memorize it. Data gathering in IT is made possible in real time and further internal processes power and other related programs of measurement that are needed for the support of application of TQM (Kaynak, 2003) or, usually how there is an effect of IT on the QM through technological and tactical human structure (Zadrozny & Ferrazzi, 1992). Ayers (1993)'s research is the first one to bring relationship between these subjects. This study facilities of new technology. Nevertheless, the document specifies that it is very important to describe IT properly, so it gets concentration of consumer on QM values and brings constant development.

While there is conceptual evidence for the important role that is played by IT in the successful use of quality management Collins (1994); Mata et al. (1995); Perez- Arostegui, Benitez- Amado, and Tamayo- Torres (2012); Zadrozny and Ferrazzi (1992), there is no specific quantitative study that supports such proposals (McAdam & Henderson, 2004). We're emphasizing many donations one of the few current studies. Forza (1995) examines the effect of data and IT on quality control problems in the manufacturing industry: constant increase, simple design of process, management of process, and the measurement of reliability related with the consumers and distributors. Burgess and Gules (1998) also scientifically examine the effect on quality control of using standard ITs. Cheng and Ngai (1998)) examine the effect of IT on QM in a wide range of organization.

Knowledge management and its constructs

Understanding is an elusive and timeless quality and it is used by organizations that make effective use of it as a profitable tool (Shahzad, Abid, Sintim, Hussain, & Nasim, 2019) . KM is a method that guarantees "those inside the organization must have the correct insights in the right format at the perfect time" (Bolisani & Bratianu, 2018). There is a significant effect of effective information management on an organization's development abilities (Attia & Salama, 2018). The capacity of an organization to remain competitive and build a new brand, mechanism and understanding depends greatly on the KM system as per (Mardani, Nikoosokhan, Moradi, & Doustar, 2018). That is why KM provides a framework for companies to be more creative and efficient in industry.

Tacit knowledge is transformed into perfect knowledge through KM firms, so that it can continue to flow throughout the organization (Maravilhas & Martins, 2019). KM can lead to information-based economies, with the assistance of a concept of information worker (Shahzad et al., 2019). Organizations can produce and exchange expertise, and can use systems to establish it as an asset (Abbas, Muzaffar, Mahmood, Ramzan, & Rizvi, 2014) and create understanding. Determination to leadership and the organization's prestige are the powerful variables in information exchanging activities (Jarrahi, 2017). Given the similarity in literary works, the current study uses as KM forms information development, knowledge development, sharing of knowledge, and implementation of understanding. Cooperation and coming up with ideas meetings are of crucial importance in the system of information development, as they are among the

good practices to generate new thoughts and propose viable solutions (C. S. Lee & Wong, 2015).

Information acquisition means taking understanding from multiple channels, such as providers, consumers, and workers, etc. to find ways to improve activities, goods, and facilities (Johnson, Fletcher, Baker, & Charles, 2019). Sharing knowledge is the distribution of experience and knowledge with others. It enables organizations to keep quality in their configuration. Staff participation in judgment-making is essential for sharing knowledge (M. Habib, Abbas, & Noman, 2019). Organizations can only profit from KM by applying the acquired knowledge from different sources. Knowledge acquired from consumers, workers and other shareholders should be used by the firm to enhance the overall business efficiency. Organizations implementing TQM procedures efficiently and incorporating KM into their processes enjoy increased profitability and share of the market (Green, Inman, Sower, & Zelbst, 2019).

IT competence, process management and knowledge management

System administrators includes statistical process control, focused to measure changes in the methods to determine if and how procedures is carried out for whom they were intended (Stocker, 1990). To identify shortcomings and areas for improvement, collecting this data and equating the current with required reliability are necessary ((Minnis, 1992)). The method of Six Sigma is an emphasis which asserts to increase efficiency, identified as minimizing the rates of deficiency via quantitative measures. Tsai (2007)analyze how having an IT strategic perspective in guiding the application of QM values (consumer emphasis, continued improvement, team spirit) as portion of the day-to-day work of experts. Tsai (2007) examine how having an IT strategic perspective to guide the use of this system of QM will make it easy to use principles of QM (focus on consumer, constant improvement and teamwork) as a everyday's life of the experts.

Another benefit of IT application development expertise is that it allows companies to carry out the same procedures in different geographical regions that provide real information for judgment instantly (Palvia, Palvia, & Roche, 1996). The strategy of IT will promote systems mechanization, decreasing process variations Dilger, Moffett, and Struyk (1997), focusing on higher endurance in the process of manufacturing, that will affect positively on performance improvements (Freund, Seung, Shamir, & Tishby, 1997).s and draw the conclusion that this effect is low, even when the use of IT is intense.

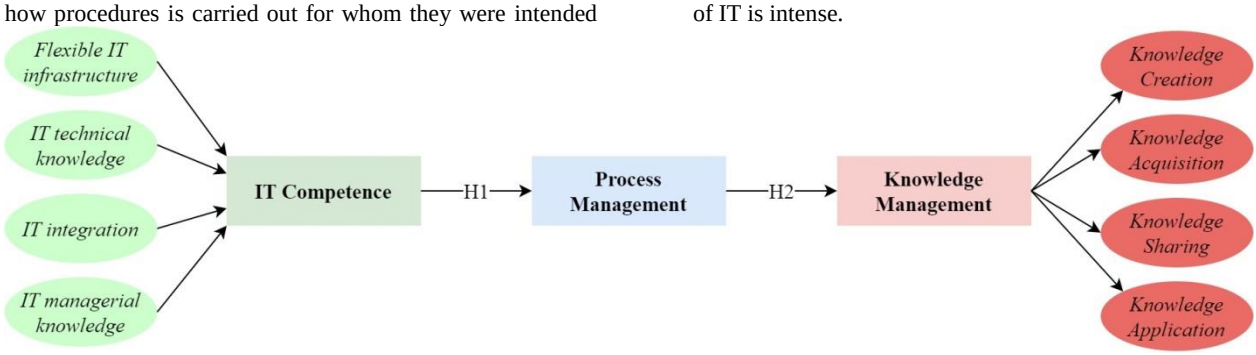

Figure 1: Conceptual framework

H1. IT competence has significant effect on process management.

H2. Process management has significant effect on knowledge management.

H3. IT competence has significant effect on knowledge management with the mediating effect of process management.

METHODOLOGY

Study Design

Specific information and its related nature and understanding define a research philosophy. It is a practice to accrue, learn and utilize the collected information for an event. Research philosophy can be divided into four basic types that are interpretivism, realism, pragmatism and positivism Holden and Lynch (2004) This study selected positivism as its research philosophy. The inductive approach of research targets some specific ideas and observations for developing broader level theories. While the deductive research approach targets to study from generalized ideas to the specific one (Rahman, 2017). This study used a deductive approach. The selection of any one research methodology is based on the targeted research philosophy and the research question. Quantitative research works on mathematical data. On the other hand qualitative research works on the in-depth study of human behavior (Streich & Levy, 2007). This study selected quantitative research. Research design has been divided into causal as well as correlational research. The correlational research presents an available association between to or more studied variables. on the other side, causal research presents the effect of one situation on others (Lewis, 2015). As this study focused on the impact of the independent variable on the dependent variable, thus causal research design was used.

Sampling design

Total required observations describe the sample size of a study. Different elements affect this determination of sample size that involves cost, convenience, time and efficiency of the researcher (Kock & Hadaya, 2018). N10 statistical formula was used in this study to determine the sample size and therein, total 110 minimum responses were required. Therefore, the study has collected 191 sample responses from the quality management professionals of manufacturing firms in Vietnam region. Sample responses can be collected through different methods. Convenience sampling is one of these. It describes the convenience of researchers in collecting data from the research participants (Soper, 2018). Thus this study focused and used this convenience sampling technique. A survey has to be organized through some specified methods. Without defining it, no survey can achieve its target. This study used a structured questionnaire for conducting a survey and collect the required data, with a five-point Likert scale that ranged from Strongly Disagree 1 to Strongly Agree 5.

Data Analysis

In every study, collected data has to be further studied to find out the information available in the data. This information helps in taking decisions related to the target population (Hardy & Bryman, 2009). This study utilized the Partial least square structural equation modeling technique for analysis purposes.

DATA ANALYSIS

Table 1: Measurement Model

Constructs	Measures	Loadings	Prob.	CR	AVE
Flexible IT Infrastructure	FITI1	0.965	0.000	0.977	0.915
	FITI2	0.934	0.000		
	FITI3	0.973	0.000		
	FITI4	0.955	0.000		
IT Integration	ITI1	0.745	0.000	0.931	0.774
	ITI2	0.933	0.000		
	ITI3	0.947	0.000		
	ITI4	0.879	0.000		
IT Managerial Knowledge	ITMK4	0.672	0.000	0.750	0.604
	ITMK5	0.870	0.000		
IT Technical Knowledge	ITTK1	0.900	0.000	0.904	0.758
	ITTK2	0.838	0.000		
	ITTK3	0.872	0.000		
Knowledge Acquisition	KA1	0.922	0.000	0.943	0.767
	KA2	0.882	0.000		
	KA3	0.919	0.000		
	KA4	0.832	0.000		
	KA5	0.818	0.000		
Knowledge Application	KAP3	0.938	0.000	0.918	0.789
	KAP4	0.933	0.000		
	KAP5	0.785	0.000		
Knowledge Creation	KC1	0.960	0.000	0.938	0.791
	KC3	0.898	0.000		
	KC4	0.815	0.000		
	KC5	0.877	0.000		
Knowledge Sharing	KS1	0.732	0.000	0.888	0.614
	KS2	0.784	0.000		
	KS3	0.892	0.000		
	KS4	0.777	0.000		
	KS5	0.721	0.000		
Process Management	PM1	0.956	0.000	0.964	0.898
	PM2	0.939	0.000		
	PM3	0.949	0.000		

As recommended by Hair, Black, Babin, and Anderson (2010), the factor loading values less than 0.40 should be removed, values greater than 0.40 and smaller than 0.70 can be kept on convergent validity basis, whereas value greater than 0.70 can be completely retained. The table showed the highest value being 0.973 (FITI3) and the lowest value being 0.439 (KAP5). Moreover, the CR values should be greater than 0.70 and AVE values should be greater than 0.50. The table showed that the highest value of CR being 0.977 (flexible IT infrastructure) and lowest value of CR being 0.750 (IT managerial knowledge), whereas the highest value of AVE being 0.915 (flexible IT infrastructure) and the lowest value of AVE being 0.604 (IT managerial knowledge). Thus, convergent validity has been attained.

Discriminant validity using Fornell and Larcker (1981)

Table 2: Fornell and Larcker (1981) Criterion

	FITI	ITI	ITMK	ITTK	KA	KAP	KC	KS	PM
Flexible IT Infrastructure	**0.957**								
IT Integration	0.180	**0.880**							
IT Managerial Knowledge	0.487	0.652	**0.777**						
IT Technical Knowledge	0.189	0.726	0.445	**0.870**					
Knowledge Acquisition	0.199	0.528	0.417	0.502	**0.876**				
Knowledge Application	0.174	0.577	0.373	0.349	0.438	**0.888**			
Knowledge Creation	0.169	0.378	0.432	0.238	0.863	0.436	**0.889**		
Knowledge Sharing	0.761	0.437	0.614	0.415	0.695	0.460	0.650	**0.783**	
Process Management	0.195	0.791	0.654	0.696	0.670	0.717	0.604	0.550	**0.948**

The diagonal values should be higher in value in contrast to the values present in settings vertically and horizontally (Hair, Matthews, Matthews, & Sarstedt, 2017). Thus, the discriminant validity has been attained using the Fornell and Larcker (1981) criterion.

Structural Model

Table 3: Formative 2nd-Order Construct (IT Competence)

	Estimate	S.D.	T-Stats	Prob.
Flexible IT Infrastructure -> IT Competence	0.235	0.059	4.024	0.000
IT Integration -> IT Competence	0.507	0.030	17.096	0.000
IT Managerial Knowledge -> IT Competence	0.180	0.012	15.639	0.000
IT Technical Knowledge -> IT Competence	0.341	0.022	15.417	0.000

The above table showed that the flexible IT infrastructure was positively and significantly related to IT competence (0.235, P < 0.01); IT integration was positively and significantly related to IT competence (0.507, P < 0.01); IT managerial knowledge was positively and significantly related to IT competence (0.180, P < 0.01); and IT technical knowledge was positively and significantly related to IT competence (0.341, P < 0.01).

Table 4: Reflective 2nd-Order Construct (Knowledge Management)

	Estimate	S.D.	T-Stats	Prob.
Knowledge Management -> Knowledge Acquisition	0.939	0.005	173.762	0.000
Knowledge Management -> Knowledge Application	0.626	0.055	11.423	0.000
Knowledge Management -> Knowledge Creation	0.918	0.012	73.909	0.000
Knowledge Management -> Knowledge Sharing	0.823	0.011	72.134	0.000

In addition, knowledge management was positively and significantly reflected knowledge acquisition (0.939, P < 0.01); knowledge application (0.626, P < 0.01); knowledge creation (0.918, P < 0.01) and knowledge sharing (0.823, P < 0.01).

Table 5: Path Analysis using PLS-SEM

	Estimate	S.D.	T-Stats	Prob.
IT Competence -> Process Management	0.804	0.020	39.233	0.000
Process Management -> Knowledge Management	0.745	0.034	22.101	0.000
IT Competence -> Process Management -> KM	0.599	0.035	17.034	0.000

IT competence was positively and significantly affecting the process management (0.804, P < 0.01). Lastly, process management was positively and significantly affecting the knowledge management (0.745, P < 0.01). The table above also showed that the process management (0.599, 0.01) was positively and significantly mediating the relationship between IT competence and knowledge management.

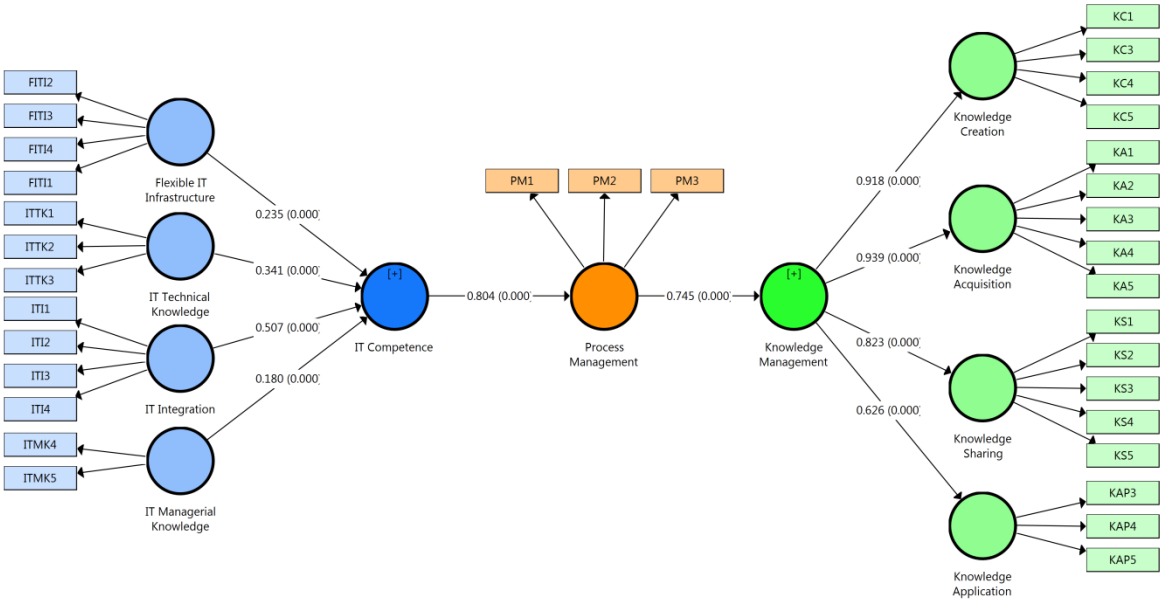

Figure 2: PLS Bootstrapping using SmartPLS version 3.2.8.

Table 6: Predictive Relevance

	R Square	R Square Adjusted	Q Square
Knowledge Management	0.555	0.553	0.256
Process Management	0.647	0.645	0.546

The table above showed that as denoted by the R-square values, the independent variables were affecting the IT competence 100%, knowledge acquisition 88.2%, knowledge application 39.2%, knowledge creation 84.2% knowledge management 55.5%, knowledge sharing 67.8% and process management 64.7%. The Q-square values were also greater than zero.

CONCLUSIONS

We are deriving important implications for study from the results acquired. First, the history examined concurs that IT alone is unable to generate a feasible competitive edge, since complementarity with other organizational resources and despite these conceptual advances, little attention was paid to the procedures through which the resources of IT communicate with other organizational and human resources and also with the resources' nature (Ravichandran et al., 2005; Wade & Hulland, 2004). methods is needed (Cagliano & Spina, 2000; Powell & Dent- Micallef, 1997). In order to highlight this restriction in previous literary works, we have developed IT as a four-dimensional expertise: IT flexible facilities, IT understanding at the managerial and scientific level, and IT assimilation into the company's techniques. Through this, there is no limitation to the research for basic services but it also analyzes the effect of other capacities of IT to deliver a verified construct of dual dimensions of the second order that can be utilized in the research in future. Thus we continue the line of study that is triggered in (Tippins & Sohi, 2003).

Further there is another significant contribution of this research is its study of competence effects of IT on method of QM. This methods' set acknowledges and disseminates broadly in the exercise of management. We designed a paradigm with two dimensions to explain the IT and studied a structural model to provide some scientific reasoning to the studies hypotheses that provide the association between studied factors.

To help executives, there should be awareness of the IT capacity of the company to obtain, create and use its resources of IT for the support of strategies. This research further provides a complete summary of specific IT abilities to guarantee implementation of IT and an assessment of the key QM activities general and to the most important programs of QM (EFQM, ISO, Malcolm Baldrige, and others.). Executives can therefore benefit from the efficiencies extracted for adopting both IT and QM programs. This research yields four major conceptual contributions. First, the study leads to the literary works on SCM and QM assimilation by providing organizational structure with powerful predictive value for the organizational outcomes. Findings of the study demonstrate that the suggested implementation has a great fit system with a high R-value (76 per cent). Comparing the R-square values acquired from previous studies using cross-sectional data for the outcomes group, it demonstrates that the 45 per cent reported by Flynn and Saladin (2001) and the 68.9 per cent recorded by Wilson and Collier (2000), both below the 0.76 R-square value in the suggested structure. This contrast promotes the greater predictive strength of the structure suggested.

Second, this study leads to the literary works of leadership by measuring the leading role within an organizational structure. There are two significant results concerning leadership role from this study. First, the management triad has a positive and optimistic impact on the construction of the SCM triad and MAKM. That supports the argument that the management triad is the implementation driver and SCM driver (Dubey, Gunasekaran, & Ali, 2015; Jung & Chung, 2016). Secondly, the impact of the leader triad on outcomes is statistically meaningful and is distinct from the results of several past studies (Flynn, Schroeder, & Sakakibara, 1995;

Kaynak, 2003; Laohavichien, Fredendall, & Cantrell, 2009). The management triad is drawing the attention of experts. The change in the leader triad's statistically significant from indirect to both indirect and direct may be the consequence of several modifications. First, measuring leadership is more advanced because it is more widely acknowledged and evaluated with a larger number of objects.

In many organizations leadership and how it is operationalized has developed to a mature stage. Third, this work promotes recent findings that investigated an organization's position in information systems (IS). In this research, the role of the IS-oriented MAKM structure is fully facilitated through the SCM triad, and the MAKM has no statistically meaningful influence on the category of outcomes. MAKM plays a comparatively less essential vital role in the organizational structure on outcomes. The observations promote our claim that IS-oriented construction, MAKM, is a required set of tools to create an atmosphere versus a direct driver of outcomes.

This research stresses that while the supply chain was always available in aspects of products in the MBNQA and considered significant in terms of prior theory, we have invented a new structure that specifically shows the build and its prospective connection within the MBNQA. This new structure that we have established has the benefit of allowing direct measurement of the significance of the supply chain to outcomes as well as offering a first step on how the MBNQA could be altered in the long term to stronger show the relationships of the supply chain within the MBNQA structure and the outcomes. This study supports a verified applicable organizational structure for sectors to benchmark their methods, particularly those that use the Baldrige Award. The optimization findings will allow the organizations within the suggested organizational structure to know the efficiency of individual concepts and interconnections between the concepts.

The un-significant relationship between MAKM and outcomes promotes professionals to examine ways to better use the construction of the IS-oriented MAKM to improve the outcomes of the organization. The advantages of IS stay a literary works debate and have affected how industry maintains IS. Over years, IS has drifted from organizations creating tools to create economic advantages to the present state where organizations have a required and omnipresent cost to sustain their enterprise (Chae, Koh, & Prybutok, 2014). However, the greater access and more affordable price of acquiring standard and homogenous IS is slowly reducing its direct benefits to enhance organizations ' competitive edge. Practitioners view it as the cornerstone of core business for organizations. A lot of big companies have started struggling in the era of big data to examine the massive amounts of data that are gathered and collected. Most inferential statistics presently target advertising apps such as market segmentation (Sanders, 2016). Future prospects, however, exist for academics and professionals to gain information that reinforces competitive edge. Additionally, derived knowledge will enhance leadership judgment-making and further reinforce the leadership triad position.

Finally, there are a number of constraints in this research that enable us to confirm those findings with certain warning. First, the data came from one region and one assistant from one unit. Since we can verify the accuracy of the information received by the profile of the executives' respondents, we would select two main informants, specialized in both disciplines of the research, QM and IT. While the data represents meaningful relationships between factors, they are not exclusively proving that these are the only valid interactions. By integrating a perceptual dimension into some of the factors, we have tried to reduce the impact of this threshold. Some other constraints are also there that can be used in future study. It would be beneficial to study the effect of expertise of IT on the QM procedures' efficacy, that is, to study the moderating impact of the expertise of IT on the impact of organizational results of implementing policies of QM It would be feasible to examine the impact of IT expertise on the efficacy of the suggested QM. By studying the effect of techniques of QM in the association between the expertise of IT and the efficiency, we could also progress the literature on the IT value to the company. It would be exciting to assess if IT expertise is more important when implementing a QM system than when implementing other methods, tools, techniques or systems in which IT obviously acts as coordinators, as per the study, such as development of new product or enterprising traditions. A final segment could be derived from the analysis of a diverse sample that allows the system to be contrasted in company sample groups depending on factors such as size or sector.

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