The effect of the relationship between integrating information systems and total quality management on company organizational performance in Vietnam

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ABSTRACT

International competition has increased the importance of quality in the corporate world. The business world is more competitive than ever, with problems and pressure growing daily. Firms face challenges in maintaining and improving Organizational Performance (OP) as they strive to maintain competitive advantage. This difficulty could be convened using complete quality management principles (TQM). Numerous organizations have successfully implemented Total Quality Management using Information Systems (IS) (TQM). Many businesses have provided higher-quality goods and services because of information technology. Combining IS, and TQM is vital in increasing a company's organizational performance. This study investigated the relationship between total quality management activities and information systems to improve organizational performance. Using 340 sample data from firms in Vietnam, the research model was constructed and evaluated to fit the Structural Equation Model analysis. The survey was carried out between March 1 and April 30, 2021. That is confirmed by the research, establishing future directions and consequences for theorists and practitioners. Quality management, information system, and organizational performance are key terms.

1. Introduction

Change is essential for organizations to increase performance and growth in an ever-evolving technology age. Many industries have undergone significant changes in recent decades. Industry 4.0 is built primarily on new technology, using the Internet of Things, cloud services, big data, and artificial intelligence to deliver outstanding customer service to the organization's operations. office. Customers can also manage their information through an integrated system of new technologies. Furthermore, information systems have evolved into a fuel for decision-making. The company's performance changes significantly depending on whether the Information System follows the decision-making procedure.

TQM is an essential idea that is gaining traction in terms of improving organizational effectiveness. Since the mid-1980s, various studies have been conducted on the links between TQM and organizational performance. According to Pinho (2008), specific empirical research indicates that TQM implementation has a considerable positive influence on organizational performance, as demonstrated in the case of small and medium-sized businesses.

Powell (1997) investigates TQM as a potential source of long-term competitive advantage. According to Chang and Sun (2007), concepts constitute the foundation of continuous organizational improvement. The organization is constantly improving in every aspect of every process, every level, and every activity, and might be the best overall objective.

In the modern era, quality is a crucial concern to attract customers and keep them longer am more extended time to obtain a competitive advantage. Complete Quality may be defined as a business tactic and idea in which all parts of an organization's procedure are integrated to meet clients' needs and prospects, which is possible with information technology and information systems. Whole Quality Management is a comprehensive strategy encompassing people, products, processes, policies, and procedures. Siam, Alkhateeb, and Al-Waqqad (2012) investigate if TQM achievement receives information system benefits in addition to organizational performance. Organizations can gain a competitive advantage by improving company quality and productivity. The primary goal of an organization nowadays is to produce more in less time while also reducing costs, known as optimization. An organization's information system plays a critical role in achieving its goals. According to Ramey (2012), organizations must accomplish faster growth to compete with the global market and persist in this competitive environment, so information systems have become crucial for all organizations. To achieve the organizational goal, more than one technique or methodology is required; integration is needed. In this work, the researchers investigate the relationship between IS and TQM to accomplish organizational development and growth. There is enormous opportunity in a continually changing environment in every area.

Our investigation has three problems. First, a research model and related assumptions are presented based on the solid theoretical results presented in part 2 of the article. The second issue is to confirm the bipartisan relationship of the information system to total quality management. The last problem is to prove by sem model to confirm the research.

2. Theoretical framework

2.1. Total quality management

2.1.1. Concept

TQM emerged from reactionary pressures against the mechanistic management model, such as a sequence of stages inspection, quality control, and quality assurance, to the organismic model, which is a new way of thinking about organizational management and stakeholders.

Many changes were made to corporate quality theories in Japan during the 1940s. After the success of Western countries, Japan, a low-quality provider, enlisted the help of quality management experts such as Juran and Deming and quickly set new Overall standards -Quality Control. During the inaugural international quality management conference in 1969, Feigenbaum was the first professional to use "Total Quality Management" (TQM). Nevertheless, Feigenbaum failed to make himself as widely known as Ishikawa. Ishikawa stated that TQM must be applied to all employees, from workers to high management.

2.1.2. Dimension

In the 1980's U.S. The government established clear criteria and rules based on Total Quality Management, creating awards such as the Malcolm Baldrige Award to promote enterprises that demonstrated Quality Management excellence.

Between 1987 and 1994, the International Organization for Standardization established and modified the ISO 9000:1994 (ISO.2013a) quality standard. ISO Quality Management concepts can be a foundation for guiding a company's performance improvement. Customer focus, leadership, employee involvement, process approach, improvement, evidence-based decision-making, and relationship management are the seven Quality Management concepts.

According to Saraph, Benson, and Shroeder (1989), Flynn, Schroeder, and Sakakibara (1994), and Ahire, Golhar, and Waller (1996), the dimension of TQM is as follows:

Table 1

Major TQM elements reported by Flynn et al. (1994), Saraph et al. (1989), and Ahire et al. (1996)

	Saraph et al. (1989)	**Flynn et al. (1994)**	**Ahire et al. (1996)**
Management at the highest levels	Role of divisional top management and quality policy	Management at the highest levels	High management dedication
Relationship with the customer	-	Consumer involvement: engagement with customers	Consumer centricity
Relationship with the supplier	Supplier Quality Control	Supplier participation	Supplier Quality Control
Workforce administration	Employee interactions	Workforce administration	Employee participation Employee education
Attitudes and behavior of employees	Employee interactions	Workforce Administration	Employee engagement
Product design process	Product development procedure	Product development	Design quality control
Process flow administration	Procedures for process management and operation	Process administration	SPC application
Data of high quality	Data that is of high quality	respond to information of high value	Use of internal quality information

Source: TQM, as reported by Saraph et al. (1989), Flynn et al. (1994), and Ahire et al. (1996)

To determine the critical TQM dimensions employed, we used the TQM dimensions described by Saraph et al. (1989), Flynn et al. (1994), and Ahire et al. (1996) (see Table 2). As a result, eight critical TQM dimensions were discovered.

Table 2

TQM fundamentals

	Code	Create/Survey Questions How much IT has been used
High administrationb acking - HMB	T1	Build your dedication to TQM known to your employees
	T2	Make it easier for top management and staff to communicate
	T3	Promote employee participation in order to enhance work procedures
	T4	Employees should be informed about TQM values
Customer service - CS	C1	Customers must be identified
	C2	Determine the demands of the consumer
	C3	Customer satisfaction should be measured
	C4	Enhance your communication with the customer
	C5	Examine customer satisfaction surveys
Relationships with suppliers RWS	Sp1	Locate suppliers
	Sp2	Enhance ordering
	Sp3	Enhance your communication with your suppliers
	Sp4	Enhance your financial dealings with your suppliers
	Sp5	Decrease the number of vendors
Attitudes and behavior of employees ABE	Eab1	Employee engagement
	Eab2	Employee devotion
	Eab3	Employee satisfaction
	Eab4	Aided in recognition of employees' contributions to quality improvement
Workforce administration WFA	Wfm1	Assist in the formation of quality improvement groups or work teams
	Wfm2	Make teamwork easier
	Wfm3	Solicit suggestions for quality improvement from personnel
	Wfm4	The staff could discuss information related to the tasks
	Wfm5	Helped in the planning of quality-related personnel training
Product development procedure-PDP	Pd1	The experimentation design
	Pd2	Departmental communication of fresh design information
Process flow administration PFA	Pm1	This question is used to find problems that need to be repaired
	Pm2	It is used to check for modifications to the design
	Pm3	The difference in the process has been reduced
	Pm4	Demand for better materials and components has increased
	Pm5	Inspection efforts have become less necessary
Information and analysis of high quality IA	Q1	Information about customers, suppliers, and employees
	Q2	Information about work methods
	Q3	Keep good system information in place
	Qi4	Implement charting tools and statistical
	Qi5	Give HR department quick information to make decisions
	Qi6	Give employees the details they need

Source: TQM reported by Ahire et al. (1996) and Author's research source

1. Management at the highest levels: Dedication is critical for high performance and organizational success. Senior management should be the first to adopt and promote the TQM approach and take full responsibility for its products and services. The high command must also give the leadership required to motivate all staff. Deming (1989) asserts that committed and strong leadership is needed for successful and long-term quality programs. Top management assistance enables the firm to facilitate quality management programs for effective performance, according to Gryna (1991).

2. Client connection, according to Bank (2000), is the extent to which a business consistently meets the requirements and expectations of its customers. All staff must always keep customers' and consumers' wants and satisfaction in mind. These needs and their level of happiness must be identified. It relates to achieving long-term organizational goals. Objectives. It is regarded as one of the fundamental elements of TQM.

3. Supplier relationships: Long-term supplier relationships must be established to help improve product/service quality.

4. The principles of employee training, empowerment, and teamwork must guide workforce management. Recruitment and training strategies must be implemented and personnel must have the necessary capabilities to participate in the advancement process.

5. Employee attitudes and behavior: Businesses must encourage positive work attitudes such as organizational loyalty, pride in one's work, a focus on common organizational goals, and the capacity to collaborate cross-functionally.

6. Product design process: All departments should engage in the design process and collaborate to develop a design that meets the customer's expectations while adhering to the company's technical, technological, and cost constraints.

7. Process flow management: Housekeeping by the 5S approach. Statistical and non-statistical improvement tools should be used as needed. Processes must be error-free. Detailed work instructions should carry out self-inspection.

8. Value data and reporting: Value information must be easily accessible, part of a transparent management system. Quality indicators such as scrap, rework, and quality cost must be documented.

2.2. Idea of organizational performance

In general, performance is an indicator of the achievement of organizational goals. The output of the firm's operations or achievement of the firm's goals is characterized as organizational performance. Venkatraman and Ramanujam (1986) classify business performance into operational, financial, and organizational effectiveness. Whereas non-financial performance comprises product quality, market share, market effectiveness, and new product introduction, financial performance includes profitability and sales growth, and organizational effectiveness is the amount to which organizations achieve their effectiveness.

Agarwal, Erramilli, and Dev (2003) and Guo (2002) define organizational performance as having two dimensions: Judgmental and objective performance. Employee and consumer perceptions such as service quality, customer satisfaction, and retention are all covered by critical performance. Accurate performance, on the other hand, comprises financial and market-based measures such as sales growth, profit, market share, and efficiency.

Dimension

According to Kotha and Swamidass (2000), Swamidass and Kotha (1998) research:

- Respondents subjectively measured many operational efficiency factors about their industry.
- Quality - Respondents subjectively rated many factors of quality in comparison to their competitors.
- PST (profitability on sales turnover) Is derived from the Fomento de la Producción database.
- Profitability per employee (PE) - calculated using data from the Fomento de la Producción database.

As stated in Table 3, factors of organizational performance according to this study include:

Table 3

Key elements of organizational performance

	Code	Construct/Survey Questions
Operational Performance (OP)	OpP1	Dram price
	OpP2	Express conveyance
	OpP3	Pliability adjusts the capacity
	OpP4	Cycle from receipt of raw materials to delivery
	OpP5	Error rate
Quality Performance (QP)	Qp1	All of our products are far ahead of our global competitors
	Qp2	Our relationship with our customers surpasses our competitors worldwide
	Qp3	Customers have always been satisfied with us for the past three years
	Qp4	How is our quality in the industry?
PST	PST	Is return on sales (PST) positive?
PE	PE	Has the profit per employee (PE) increased?

Source: Kotha and Swamidass (2000), Swamidass and Kotha (1998)

2.3. Information system

2.3.1. Concept

Information systems is the scientific and technical study of systems with specific reference to information and the complementary network hardware and software that people and organizations use to collect, filter, process, create and distribute data. An emphasis is placed on an information system with defined boundaries, users, processors, storage, input, output, and the aforementioned communication networks. Any information system tool is intended to support operations, management, and decision making. An information system is the Information and Communication Technology (ICT) that an organization uses and also how people interact with this technology to support business processes. Information systems are also different from business processes. Information systems help to check the performance of business processes. Alter (2013) argues for the benefit of working with information systems as a special kind of work system. A

work system is a system in which humans or machines perform processes and activities using resources to make possible tool products or services for customers. An information system is a working system whose activities are devoted to the collection, transmission, storage, retrieval, manipulation and display of information.

2.3.2. Dimension

Cameron, McCulloch, and Walker (1983) list five "levels of analysis": Individual, subunit, organizational, industrial, and social, and note that "the appropriateness of the level depends on the object used, the field area of focus, purpose of assessment, and so on" (p. 18). Grover (1996) lists four different types of evaluation perspectives: (1) users, (2) senior management, (3) IS staff, and (4) actual external parties Our Stakeholder List and all Whetten from both Cameron and Grover and Grover and all. The way we read the document, and evaluate the effectiveness of IS is generally based on one or more of the following five perspectives:

• An independent observer does not participate as a stakeholder.

• Individuals who want to be better off.

• The group does not want to be different.

• Managers or owners who want the organization to be better.

• The country wants the whole society to become better.

ISs are then divided into six constructs related to their use: administrative IS (ISADMN), communication-related IS (ISCOMM), IS supporting resolution (ISCOMM), planning IS manufacturing (ISPLAN), IS design product planning and production control (ISDESIGN), The Structure of Production Control IS (ISPDCTRL).

ISADMN is applied as invoicing system, inventory control system, payroll system, database and cost accounting system.

ISCOMM refers to the following IS applications: advertising on company websites, direct sales on company websites, Electronic Data Interchange (EDI), intranets, intercompany networks, and workgroups with the desire to exchange information electronically.

ISCOMM refers to the use of IS to assist managers in decision making including IS applications such as support systems, data analysis techniques, and software forecasting.

ISPLAN deals with the use of IS in production planning and execution tasks.

ISDESIGN refers to the use of IS to support the product design process and includes IS applications such as Computer-Aided Design (CAD), computer-aided product output (CAM), and Computer-Aided Engineering (CAE).

ISPDCTRL refers to the use of IS in operations and in quality control activities including applied ISs such as Computerized Numerical Control (CNC) machines, robotics, and control electronics quality and Flexible Manufacturing Systems (FMS).

According to Premkumar and Roberts (1998) to this study, aspects of IS as shown in Table 04 include:

Table 4

Key elements of information system

	Code	Construct/Survey Questions To what extent do you use (1 for no use at all and 5 for intensive use):
Administrative (ITADMN)	Ad1	Invoice information
	Ad2	Stock control information
	Ad3	Salary information
	Ad4	Database
	Ad5	Cost accounting information
Communication (ITCOMM)	Com1	Advertise on the company's website
	Com2	Direct sales by a company website
	Com3	Company intranet (internal web)
	Com4	Electronic Data Interchange (EDI) with suppliers
	Com5	Electronic Data Interchange (EDI) with customers/clients
Decision support (ITDEC)	Dsp1	Decision Support Systems (DSS)
	Dsp2	Data analysis techniques
	Dsp3	Forecasting
Planning (ITPLAN)	Pln1	Computer Aided Production Planning (CAPP)
	Pln2	Manufacturing Requirements Planning (MRP)
	Pln3	Enterprise Resource Planning (ERP) for example SAP
Production control (ITPDCTRL)	Pdc1	Numeric control machines with computer control (CNC)
	Pdc2	Computers for controlling the factory floor
	Pdc3	Robots
	Pdc4	Electronic systems of product identification
	Pdc5	Electronic systems of quality control

Source: Premkumar and Roberts (1998)

2.4. Research method: Research hypotheses

2.4.1. Information system and TQM

Weston (1993), states that all of these interventions are IS-based, as they act as a feedback mechanism for users who wish to measure competence and, in addition, they play a role as a means to get information and communication links more quickly and accurately, and facilitate the development of advanced modeling tools, systems, and techniques. Pearson and Hagmann (1996)

emphasize the key role of information and IS in TQM. Several studies have looked at how IS is related to organizational performance measures. For example, Byrd et al. (1997) used multiplier analysis to link IS investment with organizational performance. More recently, Dewhurst, Martínez-Lorente, and Sánchez-Rodríguez (2003), have suggested that IS supports TQM by improving customer-supplier relationships, enhancing process control, facilitating teamwork, and facilitating information flow, cross-departmental trust, improve process and design skills, and apply preventive assurance.

H1: Information system has an impact on the total quality management

2.4.2. Information system and organizational performance

The positive impact of IS on TQM aspects will have a positive impact on the company's efficiency Information systems are the collaboration between humans and machines that help the organization in the decision-making process. Different organizations use different technology-based information systems to make their decisions. This Information System is a Technology-based System customized to respond to the requirements of the organization. Information system is a combination of Hardware, Software, Network, Database, Graphical User Interface and User. It helps the organization Collect, scale, and audit business operations through technology, and provides the necessary information to the government and other agencies associated with the organization uninterrupted. On the other hand, it helps to organize their Product Design and improve their system as a whole. Siam et al. (2012), IS acts as a link between the organization's existing systems and TQM implementation. Prabhu and Sundar (2018) in his work, develops a software tool to mechanize the process of preparing documents and reports in the quality management system. Researchers have suggested that by using this model, small and medium-sized industries can improve their efficiency.

H2: Information system has impact on the organizational performance

2.4.3. TQM and Organizational Performance

Brah, Tee, and Rao (2002) both state that the success of any organization in the near future will depend on meeting customer needs efficiently and effectively on an ongoing basis. Woodruff (1997), customer focus is the basic principle of TQM, emphasizing on creating value for customers leading to the growth of the organization. Developing the right exploitation of TQM dimensions achieves higher organizational performance. Irani et al. (2008), customer focus is one of the key metrics of efficiency improvement. Some scholars have found that implementing TQM increases customer satisfaction and improves organizational efficiency. Asikhia (2010) found that customer orientation is positively related to firm performance. In a quality management environment, work processes are continuously reviewed to reduce errors and material waste and improve efficiency. Prajogo and Sohal (2003), continuous commitment to TQM has a significant positive impact on company performance. Continual improvement is endorsed by organizations limited to members of the organization that innovates and performs quality. It is one of the most effective quality management initiatives to achieve significant improvement in organizational performance. Li (2000) found that employee training, their participation in decision-making and information sharing are tools that enable organizations to use their resources effectively, thereby upgrade the performance of the organization. Training and development increases employee loyalty and empowers them to participate actively in the change process for continuous improvement, ultimately improving efficiency. Top management provides direction for achieving quality-related

objectives. In the quality management system, top management support provides the fundamental atmosphere for improving efficiency in the organization. Ritchie and Spencer (1994) recommends that senior management support is a broad way to improve the overall efficiency and quality of organizations. Based on the above documents, we propose the third hypothesis as:

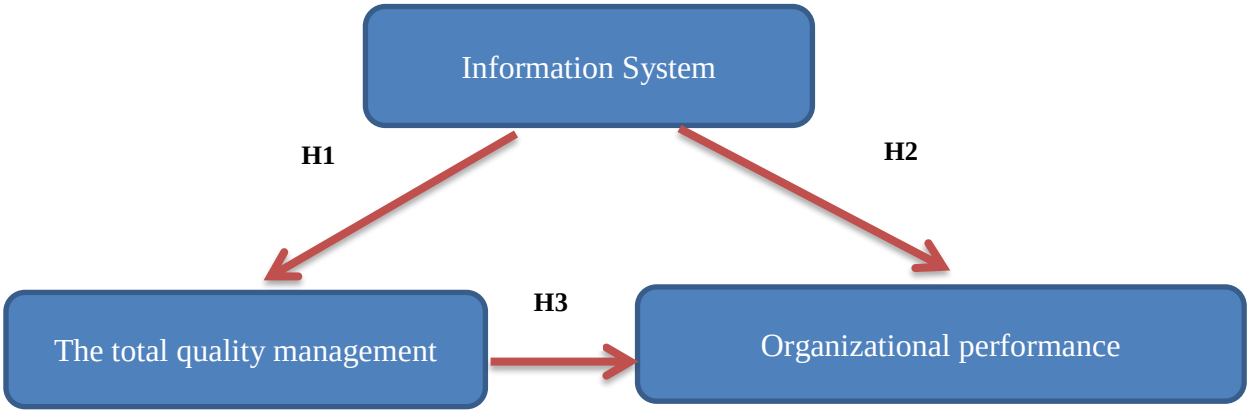

Figure 1. Research model

Source: Author's suggestion

H3: TQM has impact on the organizational performance

This file study focuses on examining the impact of Information Systems on the overall quality manager and the performance of the organization. We consider the harmonized impact of the Information System element, between overall quality management activities and organizational performance. Figure 1 shows the research model that this study uses.

3. Results and discussion

3.1. Results

3.1.1. Expert interview

To confirm this research model by expert interview test, people working in companies were interviewed at the beginning of July 2020. They are the heads of the project implementation departments. Projects based on information systems, strategic planning, and quality management projects and has more than 16 years of work experience. Their joint position has led to the fact that this research model is valuable in information systems decision-making. They emphasize that the application of information system analysis and quality management systems to the decision-making process and within the company requires strong ethical leadership. Therefore, they believe that the inclusion of information system analysis elements as a mediator between quality management and total performance makes the research model reasonable. Especially by emphasizing that the 4th industry is underway, it has revolutionized the fact that the quality of the information system can be the quality management efficiency of the entire organization is improved correctly. They predict that in the near future, artificial intelligence and information systems will be applied regularly to achieve overall management and organizational efficiency, which will increase customer satisfaction, making every customer more favorable to customers.

3.1.2. Research process

Researching, through which opinions were collected from 350 survey subjects who are workers at companies in the North, Central, and South regions with convenient observation

samples. The questions are designed to rate Likert scale with 05 different levels. Respondents are responsible for the information system, quality management, or quality management strategic planning department. 350 questionnaires were collected. 340 surveys were accepted and 10 were excluded because of an incorrect response process.

Table 5

Research methods

No	Key factors	General information
1	**Content Questions**	
	Information System	21 sentence
	The total quality management	36 sentence
	Organizational performance	11 sentence
2	**Evaluation methods**	Quantitative, liker scale
	Survey time	02 - 05/2021
	Total number of survey sheets collected	340
	Data analysis processing	supported by SPSS 22 software and AMOS (Analysis Of Moment Structures) software
3	**Evaluation of scale reliability**	
	Cronbach alpha	0.6 <= α < 7 usable data 0.7 <= α < 1 used to be the data
	Exploratory Factor Analysis	The largest factor Loading coefficient of each scale system > 0.5, total variance extracted > 50%, KMO coefficient > 0.5
	Structural modeling analysis technique SEM	If a model receives IFI, TLI, CFI values > 0.9; CMIN/df < 2 or maybe < 3, RMSEA < 0.05 accept hypothesis

Source: Author of construction statistics (2021)

3.1.3. Confirmatory Factor Analysis

Table 6 below shows the reliability calculation results and AVE (Average Variance Extracted) represents the reliability and value, there is no problem when it exceeds the standard value of 0.5.

Table 6

Reliability test and validity test

Variable	Scale	Cronbach's α	Standardized Regression Weights	Error Terms
IS	ITP	0.8112	0.8089	0.217
0.872	ITA	0.7421	0.7115	0.405
	ITC	0.7012	0.8397	0.366
	ITD	0.7412	0.7591	0.228
	ITPE	0.8369	0.8678	0.409
	ITDE	0.8012	0.8012	0.652
TQM	TMS	0.8802	0.7890	0.158
0.873	CR	0.7125	0.9203	0.213
	SUP	0.7701	0.7872	0.663
	WFM	0.8966	0.8982	0.314
	EAB	0.8754	0.8123	0.245
	PD	0.8122	0.8456	0.625
	PFM	0.6388	0.7789	0.452
	QI	0.8125	0.9199	0.632
OQ	OP	0.6698	0.7021	0.546
0.782	QP	0.7158	0.8088	0.521
	PST	0.7754	0.8230	0.512
	PE			

Source: Author of construction statistics (2021)

The following Table 6, only the PE factor does not meet the requirements, so it is excluded from the model, the rerun model has the following values: The following Figure 2 shows: According to $p > 0.05$ a suitable fit, reliability is less than 0.05, so that the fit of the measurement model is low. The Chi-square value of the results of the confirmation factor analysis is 80.617 and the degrees of freedom are 48. since the probability value of this elephant depends on the number of samples and the consistency of the model, different indexes are used. absolute fit, additional fit, and new fit are used as alternatives. A good compression index is 0.919 (GFI > 0.9 means a suitable fit), the fit is 0.912 (AGFI > 0.9 means a suitable fit), and part of the entry-level mid-measurement a suitable snug fit. (NFI > 09. means appropriate fit), non-standard fit index was 0.968 (NNFI > 0.9 fit) and the comparative fit index was 0.905 (CFI > 0.9 meaning purpose met). Confirmatory factor analysis was performed to measure the reliability of the measurement variables that make up the factor. These indicators exceed the standard value of 0.9 or more, so the research model can be considered to have fitness problems. It is a more effective method for discriminant validity testing than the Fornell and Larcker criterion or the cross-loading method. Discriminant validity is examined to find out whether the factors that make up the research model have been classified in the analysis. Discriminant validity assessment has become a generally accepted prerequisite for analyzing the relationships between latent variables. Examination of the HTMT values below the diagonal matrix between factors in this analysis found it to meet a discriminant validity of less than 0.9, can be said that the discriminant validity between each factor is satisfied by determining that the correlation between the factors is low. The correlation matrix to determine the discriminant validity and the results of the HTMT are shown in Table 7.

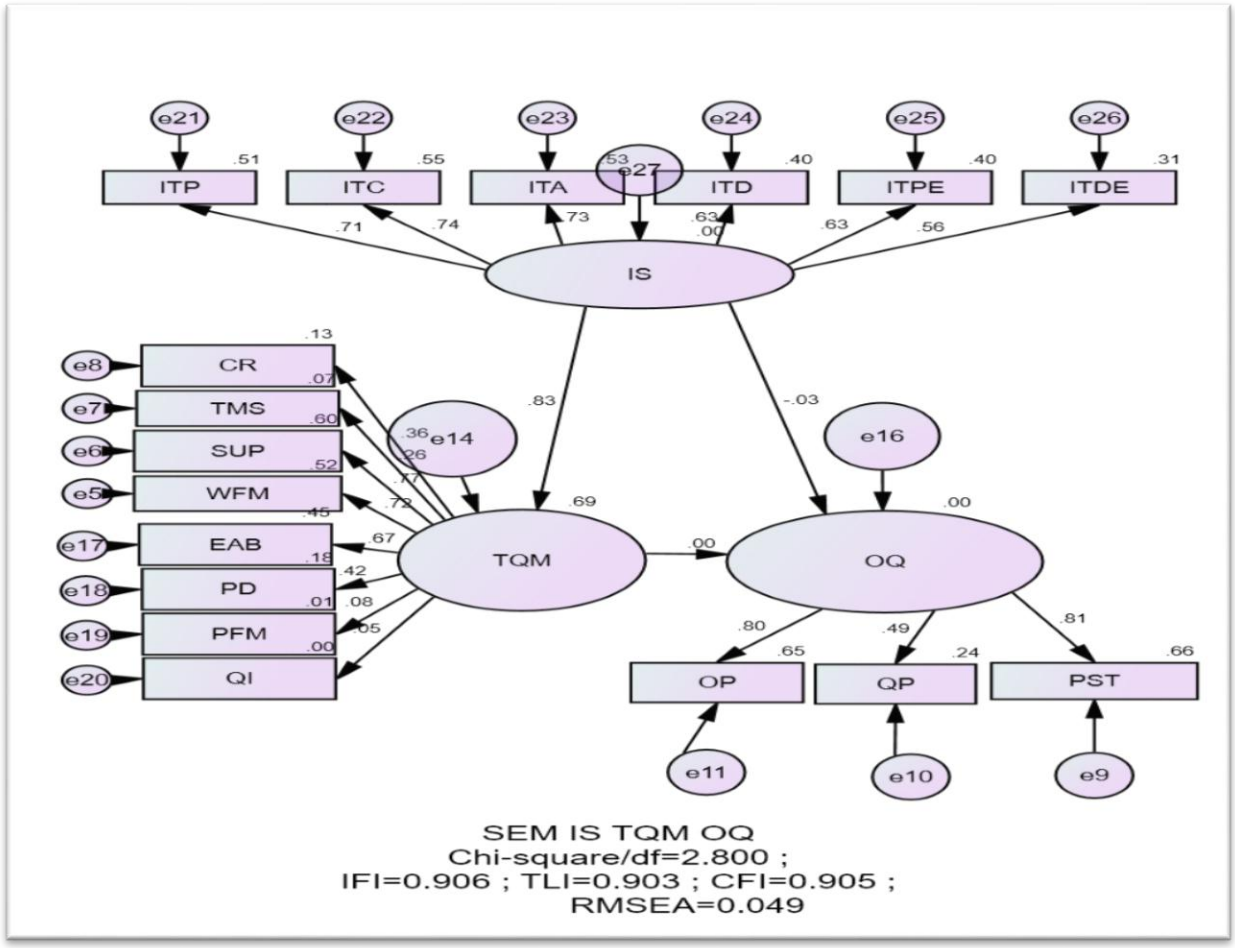

Figure 2. Result of research model

Source: Author of construction statistics (2021)

Table 7

Correlation and discriminant validity

	#1	#2	#3
(#1) TQM	1		
(#2) OQ	0.614	1	
(#3) IS	0.585	0.501	1

Source: Author of construction statistics (2021)

3.2. Discussion

The author evaluates the fit of the research model through the probability value of 0.001 and the standard conformity index of 0.903, the non-standard fit index of 0.906 and the comparative fit index of 0.963. According to the analysis results, Chi-square is 87,905 and degrees of freedom is 50. Q (Chi-square/df) is 2,800. The good fit was 0.905, the adjusted overall fit was 0.914, and the root mean squared residual (RMR) was 0.049. Table 8 confirms the importance of the research hypotheses.

Table 8

Determining the significance between factor pathways

Research Hypothesis	Latent Variable	Directions	Constructs	Unstand-Ardized Estimate	Standard Error	Critical	p-Value	Decision Making
H1	IS	→	TQM	0.612	0.058	9.115	0.000	Accepted
H2	TQM	→	OQ	0.689	0.061	9.142	0.000	Accepted
H3	IS	→	OQ	0.589	0.0608	9.114	0.000	Accepted

Source: Author of construction statistics (2021)

The results of this analysis show that OQ, H1, H2, H3 was accepted.

4. Conclusion

Information systems play an important role in TQM implementation in an organization which can help in implementing all aspects of TQM. Information systems and TQM have a positive impact on organizational growth. From the review of different literature, it is found that there is a favorable correlation between IT and TQM. As we have seen, fourth industrial revolution has shown: Total Quality Management, Information Systems are expanded to cover not only the entire value chain but also the entire value chain for interested parties. Improving the quality and analysis of information are management actions that should continue as long as the organization exists. In addition, the importance of the mediation effect of total quality management. This study creates and tests a research model on the relationship between total quality management, information systems, and organizational performance. Information systems and organizational performance factors were tested at $\alpha = 0.1$. The analysis results show that total quality management, Information system has a significant impact on the performance of the organization at the significance level $\alpha = 0.05$. In this study, the relationship between TQM and organizational performance, information systems analysis has a harmonizing effect (level $\alpha = 0.1$), through the analysis of actual system information and customer observation, the organization found that the appearance of quality and behavior improvement is different, the information system is used properly, detailed information can be found in the data. And through that, it is possible to create intelligent machine learning and artificial intelligence and create innovative new services. In addition, organizations can develop new strategies through information systems analysis. Information systems management Promoting quality improvement and satisfying customer needs should be sustained along with corporate culture.

From the analysis results, it can be seen that the importance of the information system in total quality management for the organization to develop, it is necessary to train, employees to be proficient in information technology, and senior managers need to support decision-making based on information systems. Senior managers must be active and proficient in the active use of information systems. The success or failure of management using information systems is determined by the vision and leadership of senior management.

Because the results of this study are not the results of all corporate organizations from companies in Vietnam but the results of analysis based on favorable predictive extraction. The limitation of this study is that the questionnaire was targeted at employees at companies in Vietnam. The collection of personal information without permission may violate the protection of personal information and special attention should be paid to the protection of personal information. In addition, because it is based on the method of answering the questionnaire, there is a limitation that it is not possible to investigate in detail the methods of information system analysis in companies. In a future study, we will actively acquire Information Systems at companies in Vietnam and apply machine learning and AI analysis methods related to quantitative identification and project modeling. predict organizational performance.

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