The Sustainability of TQM in an Innovative Environment: The Quality of Virtual Organization

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A R T I C L E I N F O

A B S T R A C T

This research study looks at application and sustainability of Total Quality Management in virtual organizations based on the ever-increasing number of virtual organizations in United Arab Emirates and internationally. TQM has been successfully implemented to enhance performance, profitability and sustainability of the traditional brick-and-mortar organizations. But can this implementation be replicated successfully in virtual workplaces:

This research reports have a background on the development of TQM and its relevance to both the brick-and-mortar as well as the virtual organizations. It lays down the objectives and hypotheses of the study. The hypotheses include determining how virtual organizations can improve and sustain performance and quality, establishing the TQM approach needed in virtual organization and determining how to measure the quality of the products and services of the virtual organization.

Further, the study reviews literature regarding TQM, organizational performance and virtual workplaces. It traces the genesis of the virtual organization in mid-1980s and its development to today, with a focus on the advantages and disadvantages. The research method is laid out.

Finally, the research report discusses the findings, making recommendations on how to ensure sustainability of TQM in virtual workplaces. There is a list of references at the end.

1. INTRODUCTION

Many organizations are using Total Quality Management (TQM) to improve structures, processes and performance. Moreover, innovation has become crucial for organizations wishing to enhance needs fulfillment, customer satisfaction and profitability (Prajogo and Brown, 2006). In light of this, the United Arab Emirates has set itself the target to be one of the top innovating countries by the time of its jubilee in 2021 through the National Innovation Strategy (Revere, L. & Black, 2003). While achieving higher organizational performance through innovation is important, more important is sustaining the positive outcomes (Alsughayir, 2016). This is where TQM becomes important since it enables sustenance and continuous improvement of the good outcomes. With organizations evolving through innovation, there are now many organizations that have adopted the virtual environment so as to improve performance through more efficiency and bigger target market (Ittner and Larcker, 1995). Some retain their brick-and-mortar status whilst

incorporating the virtual environment whereas others are totally virtual workplaces. But can these partial or completely virtual workplaces embrace TQM to improve and sustain performance? This research will look at the role and sustainability of TQM for improved performance in an innovative environment with a focus on the virtual workplace (Munizu, 2013).

Founded on the economic turmoil of the Western world (also referred to as the Great Depression) in the 1920s that led to statistical quality control, TQM was consequently a result of these countries' efforts to optimize quality within organizations. Japan upped the game in the 1940s when it invited various quality control gurus such as Deming, Juran and Feigenbaum to improve the quality of its hitherto shoddy imitations (Abbas, 2020). This led to rapid development of quality control and management leading to the subsequent commencement of quality circles in the 1960s. The quality circles were volunteer worker groups that looked at how to improve various aspects of an organization, making recommendations to the management (Hoang et al., 2006). Quality circles gave rise to employee motivation and total quality to encompass quality of all aspects of an organization rather than just product quality. The initiatives led to high quality products and services from Japan (Siam et al., 2012).

To counter this, Western countries evolved the Japanese concept to TQM to cover strategies, programs and techniques focused on quality. This involved quality management, employee involvement, continuous improvement and focus on the customer (Ellitan and Dihardjo, 2021). TQM reached its zenith in the 1980s and 1990s, but has since being overshadowed by ISO 9000, Lean manufacturing and Six Sigma. Nonetheless, the enduring strength of TQM, that is now also referred to as business excellence, is its fluidity to suit the quality needs of an organization or environment with a focus on customer satisfaction (Ehsan et al., 2022). Moreover, modern TQM, Lean manufacturing and Six Sigma have similar tools and techniques and also share significant parts of their philosophies. There are various awards globally aimed at adoption of quality management principles as espoused by TQM.

The fluidity of TQM renders itself to innovative environments. One of the major innovations in the recent past is the evolvement of the workplace to embrace the virtual workplace. There are now virtual organizations that exist in the cloud rather than the traditional brick-and-mortar organizations (Aityassine et al., 2022; R. S. Al-Maroof et al., 2021a; H. Alzoubi et al., 2022; Mubeen et al., 2022). Some of the best-performing organizations worldwide are a hybrid of virtual and brick-and-mortar organizations; including such companies like Microsoft, Amazon and Facebook (A I Aljumah et al., 2022a; E. Khatib et al., 2021; M T Nuseir et al., 2022a). Moreover, it has been noted that virtual workers are more productive and more loyal to a company than office-bound worker (M. Alshurideh et al., 2023; Alzoubi and Ahmed, 2019; Blooshi et al., 2023; Khan et al., 2022).

Virtual organizations are a relatively recent innovation that is increasingly gaining prominence worldwide. Having started in the 1990s with the worldwide spread and use of internet, they have gained traction with the innovation and use of cloud computing over the past ten years (Ahmed and Nabeel Al Amiri, 2022; H. M. Alzoubi et al., 2022c, 2022b). Innovation of virtual organizations renders itself to the need for a new approach of management, employee relations and customer focus in organizations (Abudaqa et al., 2021; Aziz et al., 2023). TQM comes into its own in such an innovative environment since it consists of efforts by the entire organization to continuously improve the quality of the organization's products and services by enhancing processes, procedures and performance (AlDhaheri et al., 2023; M. T. Alshurideh et al., 2023a; Farrukh et al., 2023; Gaytan et al., 2023; Khatib et al., 2022b).

1.1. Objectives

In an environment where most organizations are adopting the virtual workplace, the objectives of this research are to:

- Introduce the concept of virtual organizations.
- Study the difference between implementation of TQM and concomitant performance in the traditional brick-and-mortar organizations and the virtual organizations.
- Establish suitable model to enhance and or sustain high quality in virtual organizations.

1.2.   Hypothesis

This research study will look at whether classical TQM applies to the virtual organization. Specifically, it will answer the following questions:

1) How can virtual organizations improve and sustain performance and quality?

2) Does the virtual organization need the same classical TQM approach as the brick-and-mortar organization?

3) How do we measure the quality of the products and services of the virtual organization in an ever innovative and competitive global environment?

2.   LITERATURE REVIEW

Since 1994, many organizations have adopted innovation into their processes and ways of performing work (El Khatib et al., 2019; Nuseir et al., 2020; Nuseira and Aljumahb, 2020). The innovation has resulted to most organizations adopting internet technology with many becoming web-based organizations (Al-Kassem et al., 2013; M. El Khatib et al., 2021; Nuseir and Elrefae, 2022). Nowadays, there are a lot of opportunities that allow the organizations to adjust their work scope and services according to the customer demand. With the rapid improvement and transformation in technology, it's even easier now (Abudaqa et al., 2022; M T Alshurideh et al., 2022; Lee et al., 2023; Yasir et al., 2022). Especially, after the development of what is known as the virtual organizations that have been widely recognized and linked with innovation (T M Ghazal et al., 2023a; Louzi et al., 2022a).

The term "virtual organization" was first used in 1986 (M. T. Alshurideh et al., 2023b; H. M. Alzoubi et al., 2022h). Since that time, a lot of researches have been conducted on this type of online organizations and how they can create a revolution in the 21stcentury (Nadzri et al., 2023). Many people have defined virtual organizations in different ways, using different terms and expressions. Some have defined it as the form of dynamic collaboration of usually legally independent partners (M. T. Alshurideh et al., 2023d; H. M. Alzoubi et al., 2022g; Arshad et al., 2023). Another definition is that virtual organizations are the communities, establishments, institutions or clubs' institutions that are created by totally or partially communication technologies; they are connected to cable-laid or wireless systems (I. A. Akour et al., 2022; H. M. Alzoubi et al., 2022e; Bawaneh et al., 2023; Nuseir et al., 2021; E Tariq et al., 2022). Others yet view virtual organizations as being far from the central attribute communities, and constituting of those workers who do not have to work in the same area, and they are in the process of a product or service of different firms, by using the computer and communication systems all the time and service its customers as if the organization is a body (Aljumah et al., 2021a; Alshawabkeh et al., 2021; Alzoubi et al., 2019; Khatib, 2022). Most other definitions have the same concept that virtual organizations are those organizations that contain employees that can-do things without the need of premises through the use of online technology (Akour et al., 2023; Ahmad Ibrahim Aljumah et al., 2022a; El Khatib and Ahmed, 2020).

When this term firstly occurred, a lot of business owners and managers thought about moving to a virtual type of organization instead of just having brick-and-mortar organization (Ahmad Ibrahim Aljumah et al., 2022b; H. M. Alzoubi et al., 2022a; Khatib et al., 2016). Some of the reason behind this was that many managers thought that by converting to a virtual organization they will access a wider range of specialties, reduce bad performance by choosing better and cheaper alternatives, reduce overheads in organizations by removing inefficient internal services and show an integrated face for better superior corporate buyers (Al-Kassem et al., 2012; A. Al-Maroof et al., 2021; Nuseir and Aljumah, 2020; Emad Tariq et al., 2022).

As per (A I Aljumah et al., 2022b; El Khatib et al., 2020b), the virtual organization's lifecycle consists of 4 different periods: identification, formation, operation and termination. In the first period, the organization starts identifying the opportunities and they communicate those opportunities to other organizations (Ahmed et al., 2022; I. Akour et al., 2022; Ghazal et al., 2021; Mat Som and Kassem, 2013). In the second period of formation, they divide the role of each organization in the process of delivering the services after setting the opportunities. The third period of operation involves everyone working to achieve the common set targets, while the last period of termination is where the final report orproject is completed and it is ready to be sent out or delivered to the right

person (Al-Dmour et al., 2023; Al-Kassem et al., 2013; Almasaeid et al., 2022; T M Ghazal et al., 2023c; Sakkthivel et al., 2022).

Although this type of technologies adds a lot of improvements to the typical work environment, it is similar to any other technology. Nonetheless it has some advantages and disadvantages. And basically, we can summarize advantages in the following points (Muhammad Turki Alshurideh et al., 2022b; Varma et al., 2023).

- Overcoming any barriers related to the area and boundaries, where work can be done in any place such us home or onboard.
- Since the virtual organizations are much smaller than the normal organizations, the response will be faster and the work will be done in a better manner and in a flexible way.
- The employee's level might be better since there is no strict rules and limitation when it comes to the working hours, especially that the employees mainly will feel more comfortable dealing with people behind the screen (Al-Kassem, 2014).
- Improve the global interaction with other companies which allows the organization to have a better focus and good improvement opportunities from previous mistakes.
- Employees feel more comfortable since they don't have to appear formal to people (customers) that they deal with (Muhammad Turki Alshurideh et al., 2022a; H. M. Alzoubi et al., 2022f; El Khatib and Opulencia, 2015; Taher M. Ghazal et al., 2023; Nuseir, 2020).
- Costs are reduced.

Moreover, some other researchers have summarized the advantages of the virtual organizations into three main advantages: adaptability and flexibility, dependence on federation and temporal and spatial independence (Mohammed T. Nuseir et al., 2022).

And when it comes to the disadvantages, the following are the disadvantages of the virtual organizations (Al-Maroof et al., 2022b; Aljumah et al., 2023; H. M. Alzoubi et al., 2022d; Gulseven and Ahmed, 2022; Khatib et al., 2022a):

- Self-control is a must in similar

organizations, where each employee should control his/her own work.
- Not having a good consequence to maximize the interest between the departments, and that might create some sort of conflicts between the individuals which makes the virtual organizations not capable of handling conflicts.
- This kind of organizations are built on trust, so basically if the customer lost the interest or did not trust the company he/she will not bring repeat business to the company (Al-Kassem, 2017; Nuseir, 2021).
- Not having a good connection to the internet, depending on the area.
- The risk of being joined with an incompetent organization.

Where other researchers said that the disadvantages of the virtual organizations (H. Alzoubi et al., 2020; Amiri et al., 2020), it's not a real disadvantage but it creates some limitation to the proper work delivery process and that because of the lack of physical equipment and incomplete knowledge communication (M. Alshurideh et al., 2022; Muhammad Turki Alshurideh et al., 2022c; Hani Al-Kassem, 2021).

If we looked at the virtual organizations as a system or a work flow, it should be delivered at the highest level of quality to meet the customer expectation (Akour et al., 2021; Alzoubi, H MAlhamad et al., 2021). After viewing the overall process of virtual organizations and after studying the characteristics we can say that the following are the main problems that might occur in terms of quality:

- Efficiency problems.
- Product design problems.
- Process design problems.

From here we can stress on how important is the quality management. Mainly training is as important as quality management specially in such an organization but, training can lead to the organization management specially if it was done through a role play simulation where the owner or the quality team study how the employees react in different situations or different scenarios (H. M. Alzoubi et al., 2020). Also, that will help in detecting the very minor issues that might destroy the organization image, and it will keep a record of all possible errors in order to avoid its re-occurrence. Accordingly, we can say that related organizational

skills are the greatest source of information that provides a really good advantage (Aljumah et al., 2021b). A complex process such as the quality management concept role play is very important to any organization moving toward being a virtual organization, because this will keep the same set of quality kit that the organization used in order to ensure quality in the first place but, things will be added to suit the new concept of the organization (El Khatib et al., 2021, 2020a; Kassem and Martinez, 2022; Nuseir and Aljumah, 2022). Generally, to ensure and sustain the quality of a virtual organization is not easy. The challenge is in how can the organization instill a good quality management approach into the organization and that will be linked to a good model of communication since it is all about having a proper communication to success (R. S. Al-Maroof et al., 2021b; El Khatib and Ahmed, 2018). The reacting changes in activities or tasks when organizations are converting to a virtual origination should be quick and flexible (Al-Awamleh et al., 2022; El Khatib, 2015). Therefore, there is a set of features that aims to create a kind of quick respond to the environmental changes when it comes to the virtual organizations (Al-Kassem et al., 2022; Muhammad Turki Alshurideh et al., 2022d; Louzi et al., 2022b). And those features are: timeline of tasks execution, geographical dispersion, having a client-oriented organization, intensive use of information technology, creates a good network system that suite the nature of virtual organizations, using the key competencies of the participants (Al-Maroof et al., 2022a; Aljumah et al., 2020; M. T. Alshurideh et al., 2023c; El Khatib and Ahmed, 2019; M T Nuseir et al., 2022b).

Additionally, a lot of research has shown that impact of virtual organization comparing to the real organization is more effective in many aspects such as reliability, performance, satisfaction and organization effectiveness (T M Ghazal et al., 2023b).

3. RESEARCH METHOD

Usually, moving to the virtual organization after using the traditional organization process is not easy. A lot of organizations before they convert to the virtual organization think about the general image of their unit. What really motivate them is very important because otherwise they won't think about moving to the virtual organization. Therefore, this research is to study the virtual organizations from a quality prospective, and to know how can the quality level would sustain the same or improve after converting to the virtual organization.

This research will also give as a brief introduction to this kind or organizations, and how do people manage it. And all of that will be done using a Retrospective method, were we will review some previous researches to have a wider look about this topic also to prove and conclude the virtual organizations way of management and quality improvement or sustainability. Data are collected from previous studies and academic reliable sources, where researchers either introduce this concept or new technology or they show some examples of what have been used or managed previously on the same topic.

Table 1: Comaprison between Traditional and Virtual Organization

4. DISCUSSIONS

Moving toward a virtual organization is not a negative step if it was along with the improvement of the organization itself. But, insuring the quality of the services is very important as well. Regarding the quality of the process, the quality management team should address the objectives of such an initiative. Not only when it comes to the enterprise network but, they should go beyond the statistics focusing on what can really happen, in those organizations. Therefore, an advance quality practices should be there to upgrade the organization from a firm-center that was focusing on the product, to an inter-organizational prospective that focus on communication and how do things, got understood. In the table below, there is a comparison between the traditional organization verses the virtual organization that studies those two organizations from different aspects, which will allow us to know more clearly the differences between these two types of organizations:

Comparison points	Traditional Organizations	Virtual organizations
Premises	It has its own available premises.	Boundary- less organization that delivers it

		services online.
Employees	- Departmentalized and follow the chain of command. - Each employee has his/her own job description. - Stick to their work requirements. - No space for quick improvement. - Job oriented organization.	- Flexible working hours and they can work from any place. - Focus on teamwork. - Employees are required to continuously upgrade their knowledge. - High employee morale
Reporting system	The head of department report to the manager.	Sharing experiences, system-based reports.
The system	- Very hierarchical, organized and disciplined. - Each department follows its own set of regulations. - Strictly follows the business strategy. - Goals are settled a head of time, and it's very hard to change. - Fixed, inflexible and planned - More into paper-based work type.	- An innovative system, that suits the current organization requirements. - Accept new challenges. - Diversity and connectivity of activities. - Focus on understanding and listening." Soft skills " - Taking the teal along with you no matters in which level you are. - More flexible and it's all about communication. - More technology based.
Stability	More stable activities and progress	More dynamic in dealing with multiple tasks.
Hierarchy	Tall hierarchy	Flat hierarchy
Risk management	Maintain a specific policy to protect any kind of risk.	Employees are trained, and they are willing to take any challenge they might face.
Diversification	Less diversity and the workflow maintain the same traditional process.	More diversity is there, where thy keep having some modifications and rescheduling.

To the success of the virtual organization, three activities are required. The first activity is the networking, which is can be done through using the Information and communication technologies. That will help in increasing the relation between employees and also it will eliminate the geographical bounders. And that will create a good virtual space through the internet using whether it was between employees, customers or other organizations. The second activity is the restructuring, which can be achieved through using the networking opportunities to create a complex organization that offers a good cost and operational flexibility. This activity may include changing in the horizontal coordination, organizational unit and changes in changes control processes. And that might affect the organizational performance negatively or positively depending on how do they really apply the changes to the organization. Also, it depends on to which level they understand their organization. The last activity will be the, learning organization. In this activity, knowledge will be shared with people from same organization internally and any other external organizations. Sharing knowledge and learning is mandatory in any virtual organization, especially that they don't deal with customers or other organizations physically. But, they do communicate a lot through the internet "boundary-less" system. Although, those who convert their work organization type to a virtual one like to depends on a totally new trend in term of processes but, in this activity, they might need to refer to the traditional members selection processes and rewording system to insure the quality of the performance (J. Hemingway, C. and Breu, K. (2003). Finally, we can say that managers or business owners can't decide to move to the virtual organization before checking on what cans this new form of organizations adds to them. Therefore, organizational tasks should be a top priority to them. Managers and business owners can check the organization nature and type of tasks whether it can be converted to a virtual process or it is necessary to be achieved through the traditional process? Also, checking on how capable are the

organization employees of dealing with the same tasks through a virtual system is very important to insure and sustain a good quality level of provided product and services.

Performance measurement in virtual organizations is very essential. Specially, that it will give a good indicator about work accomplishment. There is 3 types of performance to measure in the virtual organizations the overall performance of Virtual organization, the performance that created between customers and the organization members and the performance and performance of members collaboration. To insure the quality of the provided services, a performance management approach should be used. One of the good approaches is the BSC which refers to the balance scorecard. Its a analysis approach that study the indicators and provide the best opportunity when it comes to the quality and how quality can influence the customer satisfaction. This approach can provide many details related to quality measurements such as: number of problems, frequent of collaboration with customers, problem compensation "studying the overall process from the start to the delivery time. Moreover, there are 3 dimension of quality in virtual organizations. The first dimension is the labor market and its relation to the job security. The second dimension is the job rewords. The third one is the skills work intensity and self-control. Additional to that, tracking the frequent of visits, customers feedback and the duration of each process can be a good quality management method that serve the virtual organizations.

5. CONCLUSION

The recent appearance of technologies, created a competitive environment where everyone wants to improve to meet the current market and customers expectation. Especially when we are talking about the virtual organization that became most of organization targets because of the lower required cost and faster responses to the customers. What makes this kind of organization different that, it's not only focusing on the technology itself but it required additional knowledge from the owner or the managers of the business, they have to be fully aware of what made influence them to move to this kind of organizations and how can they manage the same tasks without changing the scope of services. Also, it's much linked to cyclical process where things keep happening in the same order. Indeed,

we can't deny that learning and effective communication is the top two requirements for those who want to move from traditional organizations to the virtual organizations. Finally, since the services or the products will be handled online, a clear effective communication should be always there to insure the fully understanding from both parties.

6. RECOMMENDATION

- Improving the communication process will insure the right delivery of services and, it will help in building a good relation that based on trust with the customer in the virtual organizations.
- Follow the activities of virtual organization without ignoring some small process that were used in traditional organizations.
- Learning and sharing experience especially between employees in the same organization, because that will help in improving the performance an eliminating the errors.
- Trust is very important in virtual organizations therefore; a trustful environment should be their whither it was between the employees or between other partners "customers or other organizations.

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