

A Conceptual Framework to Minimize Covid-19 Pandemic effects on Total Quality Management in SME Software Firms

Haroon Altarawneh

Al-Balqa Applied University, Salt, Jordan

Dr.haroon@bau.edu.jo

Abstract. The purpose of this research is to establish a conceptual framework for total quality management in SME software firms in order to reduce the effects of the COVID-19 pandemic. Based on the analysis of the Total Quality Management framework, a growth analysis of the emerging sustainable business process is determined. To comprehend the TQM's primary components, a framework for TQM was developed. An in-depth examination of the TQM elements that analytically and constructively assess cognitive development at the level of economic emergence constitutes the research gap. SME software firms' characteristics and issues were discussed. TQM and the success of SMEs were found to be related. The contingency theory and expectancy theories have defined various aspects of performance and developmental growth in a business setting in this research. This research suggests a conceptual framework that can reduce the COVID-19 pandemic's negative effects on SME software firms' total quality management. Companies must concentrate on the development of software approaches in order to control business performance through SME software. A conceptual framework has established a supportive relationship among the concepts and objectives of the research structure. Here in this research, a concept analysis of the Total Quality Management components with standard business management process has emerged a better growth in the constructive business developmental process.

Keywords: total quality management (TQM), knowledge management, corporate sustainability, contingency theory of leadership

1. Introduction

Quality management is a formalised process that effectively maintains business firm documents. Several kinds of documents related to the business processes, functions, and policies are being modified based on this management process. The development of SME firms is being maintained through this process of quality improvement. Due to the Covid-19 pandemic situation, the quality performances of firms are getting affected which creates a huge impact on the market development. Different software firms are able to improve the quality of products within the competitive market. This can help them to fulfil the customer requirements in a proper manner. Controlled and lockdown policies during the Covid-19 pandemic are creating a negative effect on the performance of company growth. This study is trying to identify different information related to the total quality management system within SME software firms during the post-pandemic situation. The concepts and opinions of other researchers related to the Total Quality Management system are trying to identify through this study.

Total quality management is the consistent procedure of decreasing, terminating, and detecting errors in streamlining and producing supply chain management, upgrading the consumer experience and assuring that company's employees are speeding up with training and practicing. The gaps of the literature is the SME software firms do not how they manage the TQM after covid-19 pandemic, The purpose of this research is to make a conceptual framework of SME software firms' total quality management. Total quality management that focuses to keep all parties included in the making process credible for the whole quality of the service and the latest product. After Covid-19, the small and medium-sized companies are very vulnerable in the market because of their becoming short businesses. This study mainly focused on the analysis of the TQM strategies and components that structurally developed a constructive performance-enhancing process. On the other hand, it also stated that the constructive growth of SMEs and Software firms using of TQM framework has developed a supportive leadership strategy in the business analysis process. However, there was a huge difference in pre and post-COVID situations in the business analysis process. The structural creation of the business enhancement process and its impact on the decision-making process are not properly discussed here. Only secondary qualitative data analysis has provided a restricted service analysis process to understand its effects on the cognitive developmental process. In addition, standard management of innovative technological incorporation in the business process has ensured better growth in business developmental situations.

2. Literature Review

Quality may be summed up as an accepted standard for everything, be it a person, a product, or a material. Preventative and customer-focused procedures are necessary

to provide service or an actual quality product from a thorough plan of strategy due to the complexity of today's business environment and results (NiyiAnifowose et al., 2022).

Total quality management (TQM) is a method that explains the quality of the services and practises of all the people involved in developing and using services by firms, employees, and suppliers. This approach calls for management and customers to keep up with customer expectations. Numerous empirical studies have shown that overall quality management systems can improve small and medium-sized businesses' operational performance. Total Quality Management (TQM) demonstrated a positive link with Operational Performance in 141 small and medium-sized businesses in the Turkish textile industry that were surveyed (NiyiAnifowose et al., 2022). Applying Total Quality Management (TQM) enables businesses to increase their long-term profitability as well and SMEs software firms are not exempted from of experiencing such positive implications (NiyiAnifowose et al., 2022). However, this smooth flow of work processes were disrupted due to spread of global pandemic triggered by Coronavirus.

On both the supply and demand sides of the economy, the coronavirus pandemic has a number of negative effects, particularly for SMEs. The availability of labour for businesses declines because of employees who are ill or who must take care of children or other dependents, while schools are closed and people's movements are restricted. Even more sharp reductions in capacity use were brought on by lockdowns and quarantines implemented to suppress the outbreak (Oecd.org 2022). Supply chains are also disrupted, which leaves a shortage of basic materials and intermediary goods. SME operations are negatively affected and/or face severe financial limitations on the demand side if there is a sudden, dramatic fall in demand and revenue. Customers also experience income loss, a fear of contagion, and heightened uncertainty, all of which cause them to spend less money and consume less. These effects are made worse by layoffs and enterprises' inability to pay wages. Particularly affected are the transportation and tourism industries, which further undermines consumer and business trust (Oecd.org 2022). SMEs are likely more vulnerable than other enterprises to "social distance" in general. The virus's impacts could eventually spread to the financial markets, lowering trust and reducing lending. These many consequences have an impact on both big and small organizations. The impact on SMEs, however, is particularly negative, in part because of their larger levels of susceptibility and lower levels of resilience associated to their size. The most significant method to get a competitive advantage for SME software firms is TQM means total quality management and it has dissimilarity by giving products and quality services to others (Timesofindia 2021). TQM is a procedure for management to consistently up-grade the performance at each level and every space of credibility to assure consumer satisfaction (Fourweekmba 2022). It is the path of handling and controlling a company to

achieve business excellence in the industry. After covid-19, SME software firms choose the TQM and this recognizes that the customer is the main when the company processes high-quality products. TQM priors the employee engagement, process approach, continuous improvement, and strategic approach.

Edwards Deming's (2018)] views on quality were general but radical. Deming (2018) became interested in the opinion statistics to upgrade quality control in the company. Deming focuses on the quality of the company's products and services, his aim was to gather the history of difficulties systematically, analyze, and correct the main reasons to upgrade production of the company and terminate the difficulties in the future. Companies that aimed on upgrading the quality decreased costs while those that aimed on decreasing cost reduced quality and exactly increased costs as the output (Jayaram et al., 2018). Total quality management has to make loyalty towards the upgradation of the service and product with the focus to be competitive and live in the business industry. Software firms have to accept the new philosophy because the industry is in a new economic age after the Covid-19 pandemic. The management awakens the challenges and learns the company's responsibilities regarding the quality of the products and services and the strong workforce in the company. Improve consistently quality and productivity decreases costs for software firms after the Covid- 19.

3. Research Methodology

Constructive growth analysis of the sustainable business emerging process is identified based on the Total Quality Management framework analysis process. There was a huge change in the business situation due to the COVID pandemic's effect on all global markets. This pandemic situation has provided an impact on structural management and economic growth regulation process in competitive situations. Therefore, the implementation of the TQM strategies post COVID situation has been properly identified based on the practical situation can provide a better idea of this present situation. The researchers to serve their purposes completely are applying secondary data collection methods. However, there was a lack of information related to the primary implementation of the TQM policies in the SME's structure and its performance evaluation process. An in-depth analysis of the components of the TQM that constructively analyses the cognitive growth in the economic emergence level is the gap of this research.

4. Result and Discussion

4.1. Total Quality Management Framework in SME firms

Total Quality Management (TQM) strategy structurally managed significant growth in performance managing aspects of the organisational sectors. However, it structurally worked a cognitive path in enhancing the performance level of Small and Medium Enterprises (SMEs) in competitive market situations (Pambreni et al.,

2019). It helps provide growth to the employees of the organisation and directly affects the firm's performance level. TQM strategically focused on teamwork management, long-term commitment, unity of purposes and employees empowerment management process. On the other hand, quality product assurance and a strategic development process ensure total employee involvement levels in a competitive business environment. The competence framework of TQM has managed a large size of developed growth of firms. The responsible role of TQM in service emerging processes has enumerated a strategic role in the competencies analysis process (Martin et al., 2021). Multidimensional contrast of potential service level process has performed a competitive situation in service developmental process for the standard developmental situation. Interpersonal skill enhancement and competent activities have ensured a knowledge-based service strategy to ensure cognitive growth in service-level situations.

The main components of the TQM framework are product quality management, service development and accumulate structural leadership strategy to improve better conditions. Growth acceleration process focused on firm performance by accepting an accurate evaluation and quality developmental aspects. Analysis of 6Cs in TQM services are depicted as Commitment, Culture, Continuous improvement, Cooperation, Customer focus and Control process. All these six components of TQM have delegated a high-quality performance emerging concepts in firm-level situations.

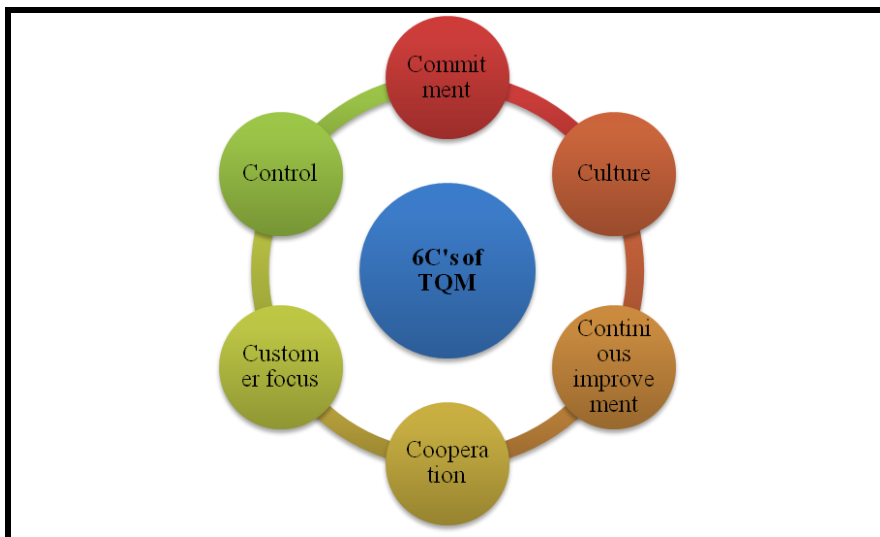


Fig. 1: 6C's Total quality management framework (source: self-created)

Trajectory accumulation of knowledge-based service analytically process has managed a sustainable work environment in business developmental structure. The significant relationship management process has provided valuable growth in the

strategic developmental processes in business conditions (Abbas 2020). However, application of TQM over the service analytical process has described knowledge creation, sharing and application in performance developmental growth in service accumulation situations.

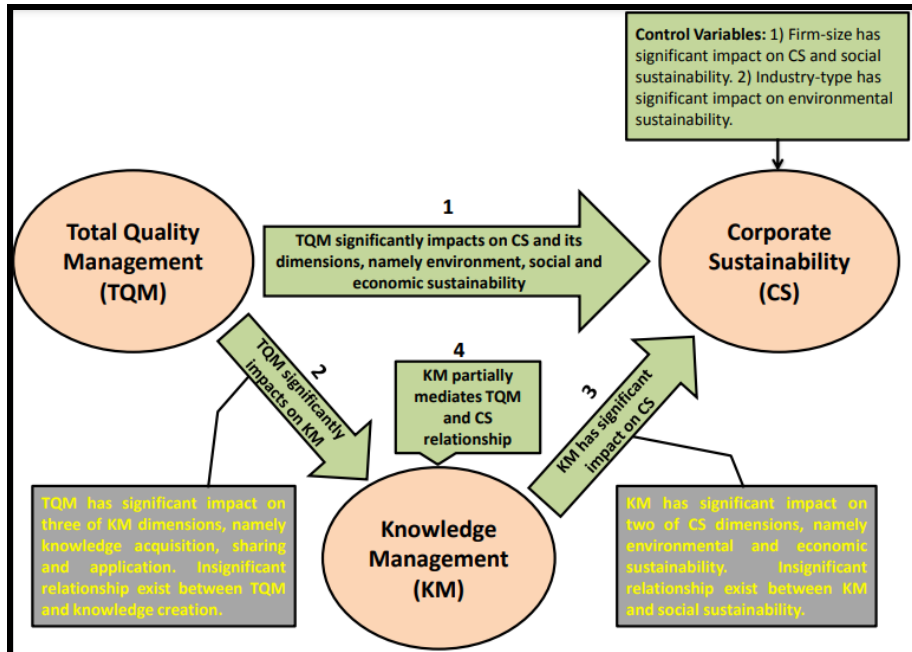


Fig. 2: TQM over sustainable growth in firm performance level (Source: [3])

Figure (2) showed that the corporate sustainability in the firm structure purposively managed an economic balance in the competitive market situation. Partial meditative relationship between knowledge management, TQM and Social responsibility has provided a significant service to emerge aspects of a competitive business situation. On the other hand, identification of customer satisfaction level in service managerial process has ensured cognitive growth in business emerging situations (Ramlawati 2018). Customer needs analysis and cognitive developmental growth have emerged a better performance in sustainable business developmental conditions. International market orientation and preparation of innovative service levels have ensured better growth in competitive market level structure. Business philosophy management and excellence performance enumeration process have emerged a constructive growth in service developmental situation.

TQM helps in providing a competitive performance management condition for SMEs in both global and local market situations. TQM has a significant positive impact on competitive business analysis and advantages development in the market structure (Husain 2022). Key features of managing standard service developmental processes have improved future sustainable performance growth in competitive

market situations. Quality assurances of products with significant social improvement structures regulated constructive growth in the service delivery process. On the contrary, of that, TQM service quality has developed a positive statistical relationship with innovative product management processes in the competitive global situation.

Different service factors such as supply chain management, product requirements identification and delivery management process are part of the TQM services (Chienwattanasook and Jermstittiparsen 2019). Therefore, entrepreneurial orientation management in SMEs and software firms move forward in the service management process. In addition, TQM has provided sustainable knowledge about social culture and its need from the environmental level. Therefore, it can ensure a competitive advantage over performance analytical aspects. SMEs also played an important role in the country's GDP management and standard service enumeration process. Therefore, innovative ideas accumulation and quality evolutionary approaches have developed better scope in TQM service analytical process. Innovative business skills and concept of product knowledge management have incorporated sustainable economic growth in service sectors of SMEs (Abubakar et al., 2018). Multidimensional analysis of performance orientation level and constructive growth in business emerging level structurally ensured a constructive growth in software firms. Using innovative technological solutions in software firms and standard performance evaluation processes has developed a better growth in the service developmental process. Empirical performances in the contingent service developmental process have ensured a constructive structure in the service managing process. Seven principles of the TQM structure are involved in the service developmental process such as customer focus, leadership management, people engagement management, process approaches, improvements, evidence-based decision making and relationship management approaches. Therefore, constructive decision-making approaches in the service enumeration process have regulated a constructive growth and competitive business developmental process.

Analysis of the Contingency theory of Leadership analysis has depicted a growth in firms' performance levels. Effective management of the knowledge-sharing attributes with the individuals of the organisation has developed a progressive rate in the service quality enhancement process (Popp and Hadwich 2018). Leadership attributes and quality structure have managed effective performance developmental growth among the leaders of the organisational structure. Task-oriented service developmental processes and behavioural contributions are part of the firm's performance improvement growth in the business process. Therefore, structural equation management in SMEs and the performance evaluation process have developed based on TQM service-enumerating approaches (Kura et al., 2020). Problem analysis of the firm's performance structure and quality determining aspects are part of the performance management services at the firm

level. Appropriate leadership management aspects using contingency theory have developed constructive growth in the firm's structure. A positive relationship analysis over the performance evaluation process has emerged a constructive growth in the service developmental process. Market data management and performance evaluation structure cognitively managed a better scope in the service developmental process (Asad et al., 2020). On the contrary, of that, competitive performance intensity and performance developmental process casually managed an addictive situation by using TQM policies in a competitive business structure.

Different types of market issues are being identified that deal with cash flow, technological modification, supply chain management process, strategic risks, and so on. In this context, organisational factors like the availability of resources, high productivity rate, quality of products, and many more are relevant for the development of software firms within the competitive market (Basri et al., 2019). The changes in the financial programs are developing issues for the companies to improve their overall performances in the international market. As per the opinion of the International Trade Centre, the great lockdown situation is creating an impact on the financial activities of small businesses (Accaglobal.com 2022). Based on this study (Figure 3), it is identified that the UK government is announcing different capital allowances between 2021 and 2013 that are effective to continue the investments within the firms in a proper way.

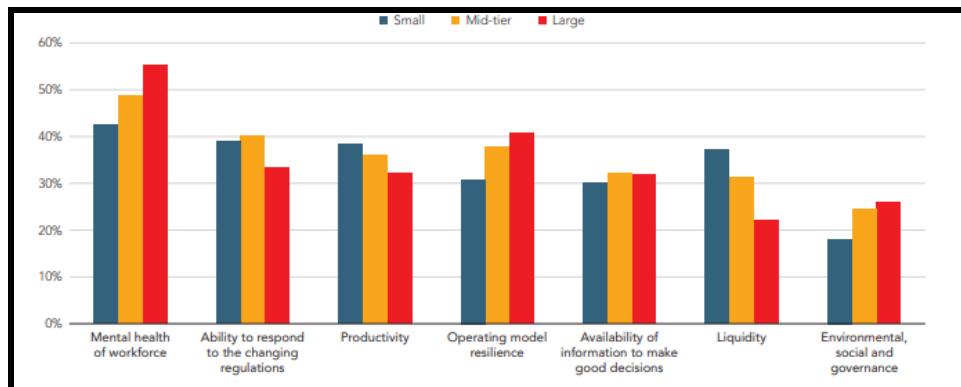


Fig. 3: Issues related to SMEs within the global market (Source: (Accaglobal.com 2022))

Small and medium-sized organisations are facing challenges related to the maintenance of their workforces after the Covid-19 pandemic situation. Due to the health safety within the workplaces are developing issues for the companies to manage their employees in a proper manner. The mental health of the staff members is also effective for the development of software firms to manage their product qualities. According to the ASEAN economic integration, the overall SME firms throughout the world are able to provide 80% of employment (chienwattanasook and Jermstiparsen 2019). This is relevant to manage their customer satisfaction

level properly. The changes in the workforce are creating a huge impact on the productivity rate of companies to deliver high-quality products. After the Covid-19 pandemic situation, business-related rules and regulations are continuously changing over time. This is effective for business organisations to improve their overall services in the market situation. In order to maintain product quality and services firms are facing challenges to modify their products in a proper manner. The changes in the staff training process, unfriendly working environment, staff experiences, and so on are modified by using the business regulation. Organisational performances are also playing an important role to increase the productivity rate of the companies.

The global pandemic situation is creating a negative impact on the environmental factors of business firms to manage their business activities. The concept of social distancing is generating a negative impact on the firms to reduce the number of workers in their workplaces (Lutfi et al., 2020). On the other hand, the rate of innovative products is also decreased due to a lack of talented workers. This creates a huge effect on the organisational environment as well as governance.

4.2. Analysis of Pre and Post COVID situation in SMEs Software firms

During the pre-covid-19 situation, the companies are able to maintain their services in a proper way. The continuous supply chain management processes can help firms to manage their rate of productivity effectively. The high quality of products is relevant for the development of the retail services in a proper manner (Cugno et al., 2022). This can improve the innovative services of the companies within the competitive market. The high-tech products are able to increase the values of the companies in a proper manner.

On the other hand, the continuous changes in the industry transformation are being identified based on technological advancement. Within the European market, 50% of the GDP contributions are being performed by SMEs (Madhavan et al., 2022). This is effective to increase the rate of business sustainability of the company within the competitive market in a proper manner. On the contrary, SME organisations are able to conduct technological transformations within the competitive market. The thematic evaluation in the pre-pandemic situation is effective to conduct a market development over time.

Based on this study, it is also specified that innovation in traditional SMEs is able to increase their rate of productivity in a proper manner. The application of different phases within the software development in Software firms is relevant to maintain financial growth effectively in a proper way (Bertello et al., 2022). The innovation and entrepreneurship complexity is effective for the companies to maintain their position within the competitive market to increase their rate of productivity.

The Coronavirus crisis is creating a huge impact on the development of the firms within the global marketplaces. The firms are depending on online services to maintain their rate of productivity. Software advancements are also generating issues for companies to manage their rate of customer satisfaction (Pnas.org 2022). On the other hand, the limitation of the services business organisations is pushing themselves to reduce the rate of employment. The rate of adaptation in commercial product adaptation is being decreased over time due to the effect of Covid-19.

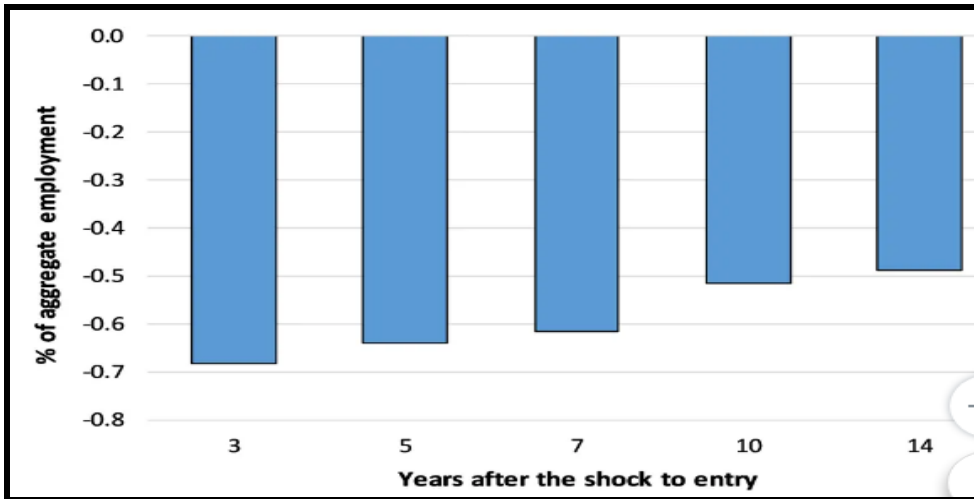


Fig. 4: Employment effects after the pandemic situation (Source: (Oecd.org 2022))

The changes in the product opportunities are effective to continue the modification of the companies within the international marketplace. Based on the on the data in figure (Ramlawati 2018), the employment rate is being decreased over time due to the effect of the Covid-19 pandemic situation. Figure (4) also shows the average employment losses across nations and cohorts of newcomers in 1995, 1998, 2001, 2004, 2007, 2010, and 2012, depending on availability, as compared to aggregate employment in the debut year. The developments of new start-up SMEs are get affected due to the lack of employees (Roper and Turner 2020). The simulation of economic disruptions is also specified within the international marketplace that decreases the performance of the companies within the competitive market.

The Total Quality Management system within business organisations is creating a huge impact on the innovation speed of the firm in a proper manner. The employee quality management, process management, and customer orientation processes are effective to modify the operational performances of the company in a proper manner. The effective Total Quality Management processes are effective to conduct the fast transformation of technologies in a proper manner. The economic development of the technologies is controlled through the application of the TQM

system within the software development industry (NiyiAnifowose et al., 2022). On the other hand, the changes in the capital investment rates are maintained through the Total Quality Management services within the competitive market.

The application of this management system is relevant to increase the awareness among the customers to conduct a drastic transformation through improving the productivity of the organisations in a particular way. The development of the leadership, strategic plans, supplier management systems, and improvement of the product development processes are being maintained through this process effectively. The supplier's management system is also improved based on this technique (Sawaeen and Ali 2020). The top management processes, as well as quality enhancement programs, are creating an impact on the performance of companies within the competitive market to achieve their target customers in a proper way.

On the contrary, the improved rate of organisational performance is well managed by the application of the TQM system within the marketplace. The capabilities of the staff members are effectively managed through this process. Based on this study it is identified that the changes in the project performances of the companies are effective to increase their rate of productivity through the TQM system (Husain 2022). The Total Quality Management system is also relevant to improve the organisational culture within the competitive market. The development of the industries is also effective for the companies to manage their overall services within the competitive market.

Due to the covid-19 pandemic situation, business organisations are focusing on online business activities that are effective to increase their rate of productivity. In order to maintain online business performance, software's are required by each firm. From such perspectives, the software's firms are able to increase their rate of productivity within the competitive market. On the contrary, the increased rate of market competition can create a negative impact on the business growth of the industry (Sinha and Dhall 2020). For this reason, companies are required to conduct technological advancements that can help business firms to manage their performances in a proper manner.

In order to manage business performance through software's companies are required to focus on the development of the software approaches.

In this context, the Expectancy theory is playing an important role to improve the business activities of the companies. This is relevant to fulfil the company's expectations in a proper manner. The changes in organisational behaviours can help business firms to achieve their market goals in a proper manner (Imran et al., 2018). The modification of the company expectancies is also relevant for the firms to fulfil the requirements of the customers within the marketplace. The development in the global market is also maintained by applying this theory effectively. The application

of reward facilities is effective for the company to increase their rate of productivity as well as to perform employee motivation in a particular manner.

The application of software product strategies is relevant to develop new software's in a proper way. The modification of the customer requirements is also relevant to mitigate software strategies in an easy way. Automation services within the competitive market are one of the important factors related to software development (Sim et al., 2021). The Covid-19 crisis is creating an effect on the development of software within the competitive market through the application of online services.

Total quality management of the software firms of SME is very challenging to focus on the consumers and serves better quality products and services. Due to this reason, their business in the industry became successful. TQM also focuses on the improvement of the quality of the company's product and the employees, and the firms accept systematic and planned methods by the conceptual framework for TQM.

5. Conceptual Framework

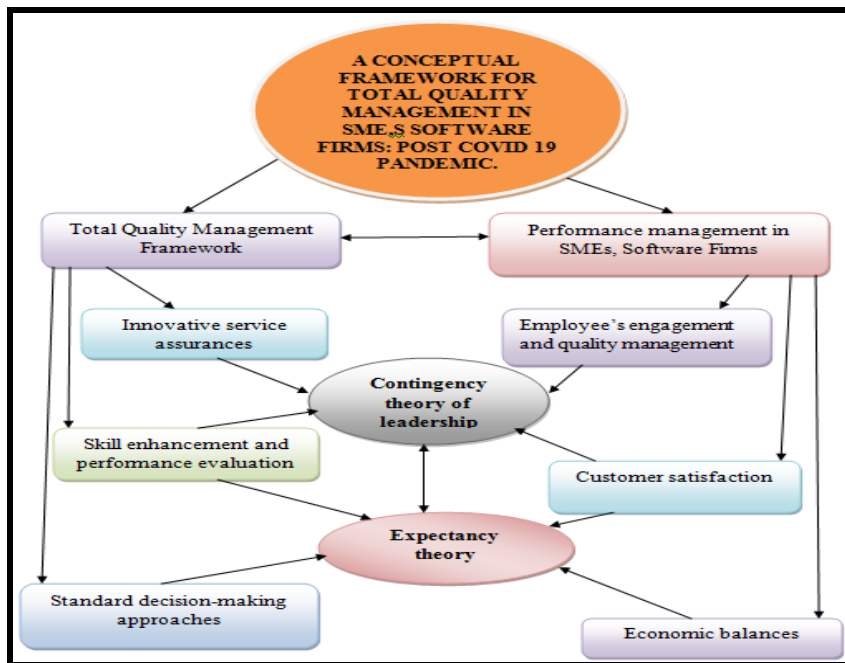


Fig. 5: Conceptual framework (Source: Self-created)

The main components of the conceptual framework in the study analysis process are related to theoretical interventions with components analysis structure. Empirical analysis of the findings from the literature sections and comparative components analysis process has regulated a constructive idea in business structure. Therefore, in this study, an effective leadership strategy with a competitive service

analysis process has improved a constructive structure in the competitive situation analysis structure (Sciedirect.com 2022). Components of the TQM framework in service analysis, evaluation and decision-making approaches have developed a constructive growth in business services.

In this research, contingency theory and expectancy theories have defined different aspects of performance developmental growth in a business situation. An analysis of innovative strategies and customer engagement levels has purposively developed a scope of effective service management in a competitive business structure. Standard service developmental rates in the business structure have emerged as a constructive service analysis process for SMEs at a competitive business development level (Power et al., 2020). In addition, an effective leadership strategy has emerged a constructive growth in technology-based performance evolving structure. The post-COVID situation has been managed by constructive growth in the service developmental process.

A conceptual framework has established a supportive relationship among the concepts and objectives of the research structure. Here in this research, a concept analysis of the Total Quality Management components with standard business management process has emerged a better growth in the constructive business developmental process. Risk analysis of the performance level structure has been managed by using the TQM framework (Mousa and Othman 2020). Participation of TQM in economic, quality, decision-making approaches, customer satisfaction level and standard leadership managerial approaches have ensured strategic growth in service sectors. In addition, compatibility enhancement services with analysis of emerging practical problems have been managed by using TQM in SMEs and Software Firms. In addition, theoretical contravention in the service accumulation process has developed a better scope in the quality enumeration process.

Financial development in small and medium-sized firms by using advanced technological services has developed a better scope. Alternative solution analysis in the complex situation of competitive global business services has been managed based on the TQM service emerging process. A social and cognitive cultural accusation of service level has improved an authentic intervention process of quality assuming service level (Basheer et al., 2019). Analysis of both the benefits and challenges in the service process has emerged a constructive growth in the competitive business environment situation. Participatory leadership approaches accumulated a better structure in the service developmental process for SMEs and Software firms.

TQM improved a better growth in the cultural quality embodying process to improve critical quality assurance level. Flexible management of the quality generating structure after post COVID situation has imparted better growth in the service accumulation process. In addition, the incorporation of technologically advanced services into the performance analysis process has improved a better

growth in service developmental conditions (Shad et al., 2019). Proper training management to the employees of the organisation can easily handle the software intuitive interferences in quality developmental aspects in business structure. A quick analysis of the performance structure with technology-based services has developed suitable conditions after the post-pandemic situation (Kazancoglu et al., 2018). In addition, the software evaluation strategy also improved the decision-making process to improve financial stability in competitive market conditions.

On the other hand, the configuration of the quick step-up over performance developmental structure structurally developed better aspects at the business level (Elfaki and Bassfar 2020). In addition, it is also associated with customer satisfaction management and operational performance developmental structure. Standard leadership quality has developed an effective team performance growth that regulated a comprehensive structure in the business condition (Bitkowsk 2020). Work flexibility helps in managing critical situations analysis processes that have improved productive growth in business developmental situations (Fischer 2020). Software incorporation in SME services helps in regulating the documentation process and effective service evaluation structure (Agrawal and Chari 2020). Therefore, proper training management for the employees has managed a better scope in service sectors.

6. Conclusion

The overall study is able to illustrate different aspects of the Total Quality Management system within SMEs of software firms during the post-pandemic situation. The development of software programs can be managed through a proper TQM system that is able to provide competitive advantages for the companies. In the pre-Covid-19 situation, companies are able to perform a frequent supply chain service by using manual services. On the other side, the supply chain management services are affected during the post-pandemic situation. The availability of resources, financial crisis, limited workforce, and so on are creating a negative impact on the firm to manage their overall services within the competitive market.

The development of the companies within the international marketplace is also being controlled through this process in a proper way. The unique circumstances are creating a huge impact on the company to manage their overall services to increase the business workflows in a proper manner. The Post-Covid situation is effective to develop different opportunities within the competitive market to secure their market position. The limitations of the workforce are also creating a huge effect on the firms to manage their overall services within the global market. The application of theories is relevant to increase the productivity of the companies in a proper manner to achieve their business goals.

References

Abbas, J., 2020. Impact of total quality management on corporate sustainability through the mediating effect of knowledge management. *Journal of Cleaner Production*, 244, p.118806

Abubakar, R. A., Kura, K. M., & Ringim, K. J. (2018). Total quality management, firm performance, and the moderating role of competitive intensity. *Journal of International Business, Economics and Entrepreneurship (JIBE)*, 3(1), 10-20

Accaglobal.com. (2022). Medium-sized-businesses. Available at: https://www.accaglobal.com/content/dam/ACCA_Global/professional-insights/cmsbpc19/PI-MEDIUM-SIZED-BUSINESSES.pdf [Accessed on: 6 October 2022]

Agrawal, M. & Chari, K. (2020). Impacts of process audit review and control efforts on software project outcomes. *IET Software*, 14(3), 293-299

Asad, M., Chethiyar, S., & Ali, A., 2020. Total quality management, entrepreneurial orientation, and market orientation: Moderating effect of environment on performance of SMEs. *Paradigms; A Research Journal of Commerce, Economics, and Social Sciences*, 14(1), 102-108

Basheer, M. F., Hafeez, M. H., Hassan, S. G., & Haroon, U. (2018). Exploring the role of TQM and supply chain practices for firm supply performance in the presence of organizational learning capabilities: A case of textile firms in Pakistan. *Paradigms*, 12(2), 172-178

Basheer, M., Siam, M., Awn, A., & Hassan, S. (2019). Exploring the role of TQM and supply chain practices for firm supply performance in the presence of information technology capabilities and supply chain technology adoption: A case of textile firms in Pakistan. *Uncertain Supply Chain Management*, 7(2), 275-288

Basri, S., Almomani, M. A., Imam, A. A., Thangiah, M., Gilal, A. R. & Balogun, A. O. (2019 September). The organisational factors of software process improvement in small software industry: Comparative study. In *International Conference of Reliable Information and Communication Technology*, 1132-1143, Springer, Cham

Bertello, A., Ferraris, A., De Bernardi, P. and Bertoldi, B. (2022). Challenges to open innovation in traditional SMEs: an analysis of pre-competitive projects in university-industry-government collaboration. *International Entrepreneurship and Management Journal*, 18(1), 89-104

Bitkowsk, A. (2020). The relationship between business process management and knowledge management-selected aspects from a study of companies in Poland. *Journal of entrepreneurship, management and innovation*, 16(1), 169-193

Chienwattanasook, K. & Jermstittiparsen, K. (2019). Influence of entrepreneurial orientation and total quality management on organizational performance of pharmaceutical SMEs in Thailand with moderating role of organizational learning. *Systematic Reviews in Pharmacy*, 10(2), pp.223-233

Cugno, M., Castagnoli, R., Büchi, G., & Pini, M. (2022). Industry 4.0 and production recovery in the covid era. *Technovation*, 114, 102443

Elfaki, A. & Bassfar, Z. (2020). Construction of a software development model for managing final year projects in information technology programmes. *International Journal of Emerging Technologies in Learning (iJET)*, 15(21), 4-23

Fischer, M., Imgrund, F., Janiesch, C. & Winkelmann, A. (2020). Strategy archetypes for digital transformation: Defining meta objectives using business process management. *Information & Management*, 57(5), 103262

Fourweekmba. (2022). Total-quality-management. Retrieved from: <https://fourweekmba.com/total-quality-management/> [Retrieved on: 24-10-2022]

Husain, C. A. A. B. C. (2022). Implementation total quality management (TQM) to determine competitive advantage in small and medium enterprise (SME). *Journal of Management Info*, 9(1), pp.48-72

Jayaram, J. Ahire, S. L., & Dreyfus, P. (2018). Contingency relationships of firm size, TQM duration, unionization, and industry context on TQM implementation— A focus on total effects. *Journal of operations Management*, 28(4), 345-356

Kazancoglu, Y., Kazancoglu, I., & Sagnak, M. (2018). A new holistic conceptual framework for green supply chain management performance assessment based on circular economy. *Journal of cleaner production*, 195, 1282-1299

Kura, K. M., Abubakar, R. A. & Salleh, N. M. (2020). Entrepreneurial orientation, total quality management, competitive intensity, and performance of SMEs: A resource-based approach. *Journal of Environmental Treatment Techniques*, 8(1), 61-72

Lutfi, M., Buntuang, P. C. D., Kornelius, Y. & Hasanuddin, B. (2020). The impact of social distancing policy on small and medium-sized enterprises (SMEs) in Indonesia. *Problems and Perspectives in Management*, 18(3), 492

Madhavan, M., Wangtueai, S., Sharafuddin, M. A. & Chaichana, T. (2022). The precipitative effects of pandemic on open innovation of SMEs: A scientometrics and systematic review of industry 4.0 and industry 5.0. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 152

Martin, J., Elg, M., Gremyr, I., & Wallo, A. (2021). Towards a quality management competence framework: Exploring needed competencies in quality management. *Total Quality Management & Business Excellence*, 32(3-4), pp.359-378

Mousa, S. K. & Othman, M. (2020). The impact of green human resource management practices on sustainable performance in healthcare organisations: A conceptual framework. *Journal of Cleaner Production*, 243, 118595

NiyiAnifowose, O., Ghasemi, M. & Olaleye, B. R. (2022). Total quality management and small and medium-sized enterprises' (SMEs) performance: Mediating role of innovation speed. *Sustainability*, 14(14), 8719

Oecd.org. (2022) start-ups-in-the-time-of-covid-19-facing-the-challenges-seizing-the-opportunities. Available at: <https://www.oecd.org/coronavirus/policy-responses/start-ups-in-the-time-of-covid-19-facing-the-challenges-seizing-the-opportunities-87219267/> [Accessed on: 6th October 2022]

Oecd.org. (2020). Coronavirus (COVID-19): SME policy responses. <https://www.oecd.org/coronavirus/policy-responses/coronavirus-covid-19-sme-policy-responses-04440101/>

Pambreni, Y., Khatibi, A., Azam, S., & Tham, J. J. M. S. L., (2019). The influence of total quality management toward organization performance. *Management Science Letters*, 9(9), pp.1397-1406

Power, K., McCrea, Z., White, M., Breen, A., Dunleavy, B., O'Donoghue, S., Jacquemard, T., Lambert, V., El-Naggar, H., Delanty, N., & Doherty, C. (2020). The development of an epilepsy electronic patient portal: Facilitating both patient empowerment and remote clinician-patient interaction in a post-COVID-19 world. *Epilepsia*, 61(9), 1894-1905

Popp, M. & Hadwich, K., (2018). Examining the effects of employees' behaviour by transferring a leadership contingency theory to the service context. *SMR-Journal of Service Management Research*, 2(3), 44-62

Pnas.org. (2022). The impact of COVID-19 on small business outcomes and expectations. Available at: <https://www.pnas.org/doi/10.1073/pnas.2006991117> [Accessed on: 6th October 2022]

Qad. (2018) dr-w-edwards-deming-hero-quality. Retrieved from: <https://www.qad.com/2017/10/dr-w-edwards-deming-hero-quality#:~:text=Philosophy%20of%20Quality-,Dr.,increase%20costs%20as%20a%20result.> [Retrieved on: 24-10-2022]

Ramlawati, R. (2018). Total quality management as the key of the company to gain the comrtitiveness, performance achievement and consumer satisfaction. *International Review of Management and Marketing*, 8(4), pp.60-69.

Roper, S. & Turner, J. (2020). R&D and innovation after COVID-19: What can we expect? A review of prior research and data trends after the great financial crisis. *International Small Business Journal*, 38(6), 504-514

Sawaeen, F. & Ali, K. (2020). The mediation effect of TQM practices on the relationship between entrepreneurial leadership and organizational performance of SMEs in Kuwait. *Management Science Letters*, 10(4), 789-800

Sinha, N. & Dhall, N. (2020). Mediating effect of TQM on relationship between organisational culture and performance: Evidence from Indian SMEs. *Total Quality Management & Business Excellence*, 31(15-16), 1841-1865

Imran, M., Aziz, A., Hamid, S. N. B. A., Shabbir, M., Salman, R., & Jian, Z. (2018). Retracted: The mediating role of total quality management between entrepreneurial orientation and SMEs export performance. *Management Science Letters*, 8(6), 519-532

Sim, S. S., Yip, M. Y., Wang, Z., Tan, A. C. S., Tan, G. S. W., Cheung, C. M. G., Chakravarthy, U., Wong, T. Y., Teo, K. Y. C., & Ting, D. S. (2021). Digital technology for AMD management in the post-COVID-19 new normal. *The Asia-Pacific Journal of Ophthalmology*, 10(1), 39-48

Sciencedirect.com. (2022). Expectancy-theory. Available at: <https://www.sciencedirect.com/topics/social-sciences/expectancy-theory#:~:text=Expectancy%20theory%20suggests%20that%20individuals,amount%20of%20products%20employees%20produced.> [Accessed on: 6th October 2022]

Shad, M. K., Lai, F. W., Fatt, C. L., Klemeš, J. J., & Bokhari, A. (2019). Integrating sustainability reporting into enterprise risk management and its relationship with business performance: A conceptual framework. *Journal of Cleaner production*, 208, 415-425

Timesofindia. (2021). SME-post covid-scenario, retrieved from <https://timesofindia.indiatimes.com/agyeya/msmes-in-india-post-covid-scenario/?source=app&frmapp=yes> [Retrieved on: 24-10-2022]