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Investigating the Role of Continuous Quality Improvement in Shaping Agile Service Organisations

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Abstract

Organisational agility has become one among imperative differentiators organisations require to sustain competitiveness in the globally connected environment in which trade, information and social trends take place at a relatively instantaneous speed. An effective business model for agile organisations should consider a comprehensive synergy between structure, people, processes and technology components. Some among key attributes of agile organisations include efficient decision-making cycles, innovative customer focused culture, team driven practices, customer involvement, high-tech focused capabilities and other leading-edge drivers. These attributes are some of the indicators found in the tools and techniques of quality and continuous improvement. This study sought to investigate if quality and continuous improvement solutions could have meaningful impact towards shaping agile service organisations. The results reveal that the tools of quality and continuous improvement are closely related to agile service organisations objectives and outcomes, therefore a service organisation that drives its goals and objectives through quality and continuous improvement practices could also effectively adopt an agile business strategy, inheriting and integrating tools and techniques from quality and continuous improvement, realising even greater positive results.

Keywords
Agile Organisations, Quality, Continuous Improvement.

1. Introduction
The social and corporate dynamics of today demands that organisations become adept in responses to continuous rapid change fostered by the global competitive environment, in which trade, information and social trends take place at a relatively instantaneous speed. Today's consumers have global access to goods and services at a glance and this including other factors have created an environment where consumers are aware of their specific needs and wants as well as precisely how these should be serviced.

In terms of goods, consumers demand flexibility, speed in delivery, customization and competitive pricing. In terms of service, consumers expect transparency, involvement, personalized service and customer experience throughout the cycle of the purchaser's journey and service delivery. This reality has merely been amplified by increased access to the global marketplace over the past few years, which has somewhat shifted forces of competitiveness across various industries.

Given the above dynamics, organisations are faced with the reality of either keeping up with or claiming their position as market leaders by continuously remaining innovative, agile and providing high quality, differentiated goods and services at all times. Organisational agility has therefore become an imperative capability required by service

organisations to remain relevant and ahead in their respective industries. Brosseau, Ebrahim, Handscomb, and Thaker (2019) emphasised that agile organisations require the consideration of comprehensive strategies that will inclusively cover human capital, processes, technology and structural facets of the organisation. This study considers the importance of organisational agility for service organisations and investigates the role quality and continuous improvement practices contribute towards shaping agile organisations. The study was conducted through a survey questionnaire methodology and various services organisations in different fields participated on the study.

1.1 Objectives

The objectives of this study included the following:

- To determine the influence quality and continuous improvement practices have towards enabling agile service organisations
- To determine the relationship between key drivers of quality practices and agile service organisations
- To recommend areas of important consideration for successful implementation of agile organisations in the service environment

2. Literature Review

Cheng, Zhong and Cao (2020) described organizational agility as a company's ability to readily and swiftly predict and creatively react to unforeseen changes in external market surroundings. Zhang, Liu, Chen and Tang (2022) suggested that organisational agility underscores the solid mentality of recognizing and acknowledging market changes as meaningful opportunities for developing strategic goals. The growth of organisational agility strategy frequently requires immediate exposure to extensive information and resources (Lu and Ramamurthy 2011). The concept of business process agility dictates that organizations adapt to market needs by revamping their current processes and gain an edge in unpredictable market scenarios (Nazir and Pinsonneault 2021)

According to Arditi and Gunaydin (2015), Total Quality Management emphasises process augmentation, consumer and supplier participation, collaboration and development with the objective of attaining client satisfaction, cost optimisation and excellent results about a task. Continuous improvement is a sustainable journey that only an organization fully committed to the challenges ahead shall embark unto. Young (2011) remarked that continuous improvement has been pronounced by experts the quality space that notwithstanding the actual modifications being implemented to technical processes; very often the changes are applied on the behavior of human patterns therefore it becomes important that active participation of those to be affected be encouraged while considering experts that will effectively handle the dynamics of human behavior particularly when faced with change. Gupta (2012) elaborated that some of the techniques that were introduced to service firms, they include amongst others Quality Function Deployment (QFD), Statistical Process Control, Just In Time, and Quality Circles all originated in manufacturing and then were adopted by some researchers to fit service organizations**.**

The ultimate perception of service quality rests with the customer and it is they who determines the level of satisfaction (Hashim et al. 2011). Sichtmanm, Selansisky and Diamantopoulos (2011) highlighted that superior service quality in firms engaging business with international markets have been highly pronounced as a competitive advantage achievable through maintaining quality management practices which result to service quality that exceed that of competitors in foreign markets. Li (2011) argue that service quality has the advantage of being difficult to imitate as compared to product quality and price; that service quality was earlier described under expectations versus performance gaps based on customers perceptions but later criticized due to reliability and discriminant validity on its computational measure scores, however a compromising approach of identifying specific aspects of service quality as antecedents to overall service quality by combining expectations and perceptions into one measure was observed as effective and practical. Lee, et al. (2011) regard relationship quality as lucrative to making successful business deals; it also builds trust and mutual familiarity between service firms and customers

3. Methods

This study was conducted on service-based organisations that have adopted quality management practices into their business environment. The organisations data was collected from operate in different industries; these varied from logistics and distribution, public services and ICT services. One of organisations was ISO certified, while others were busy with preparations for certification and others were vested into implementing quality tools and strategies in their environment. The questionnaire was developed and distributed to employees from five organisations across different

levels and work areas as well as across various divisions to capture more diversified results through google form's online survey tool.

The combination of probability and non-probability sampling was undertaken such that simple random, purposive and convenience sampling was used. Personnel across various levels and divisional functions were randomly selected and invited to participate varying from lower levels, specialists, management and above in these organisations. Experienced and knowledgeable employees who were indicated to have interest in participating on the study were purposively and conveniently sent questionnaires to participate on this study.

4. Data Collection

A sample of 150 questionnaires were distributed across these five organisations by sharing the link to the survey through emails as a primary mode of communication, with extending requests through text messaging where applicable. From the distributed questionnaire, 102 were completed online. Data was then analysed with the SPSS software to generate meaningful statistical results.

With regards to data analysis, results were statistically analysed utilizing methods such as factor analysis, empirical, descriptives and theoretical reliabilities, frequency distribution analysis, normalities, correlations between factors and comparisons. These were used for used to achieve various statistical objectives useful for the study, from validating the statistical suitability, robustness and reliability of the data, testing the extent of relationships between variables and others.

5. Results and Discussion

5.1 Frequencies and Descriptives

The following section analysed the frequencies and descriptives in the context of demographic analysis of the respondents on this study. The age group as well as the level of education between groups of respondents were selected as categories of demographic analysis as per results below:

Table 1. Age Group Frequencies analysis

Age group					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25 years	14	13,7	13,7	13,7
	26-30 years	16	15,7	15,7	29,4
	31-40 years	36	35,3	35,3	64,7
	41-50 years	31	30,4	30,4	95,1
	Above 50 years old	5	4,9	4,9	100,0
	Total	102	100,0	100,0	

Table 1 provides a brief analysis of the distribution of the respondents' age, where groups varied from 18 to 25 years up to above 50 years of age in terms of categories. The majority of respondents were between 31 to 40 years at 35.3%, followed by the group of 41 to 50 years at 30.4%, then 26 to 30 years old respondents at 16%. This potentially indicated that either the majority of respondents who showed interest in the study were employees above 30 years of age, or that the majority of people's age cycle was concentrated between 30 and 50 years in the organisations that participated in the study.

Table 2. Level of Education Frequencies analysis

What is your highest level of education?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary education (Grade 3-7)	1	1,0	1,0	1,0
	Secondary education (Grade 8-11)	10	9,8	9,8	10,8
	Matric	41	40,2	40,2	51,0
	Certificate/Diploma	23	22,5	22,5	73,5
	Degree	19	18,6	18,6	92,2
	Post Graduate qualification	8	7,8	7,8	100,0
	Total	102	100,0	100,0	

Table 2 provides an analysis of the distribution of the respondents' level of education, where groups varied from primary education to post graduate qualification educational categories. The majority of respondents had matric/grade 12 qualifications at 40.2% followed by those with certificates and diploma education by 22.5%, then respondents with degree by 18.6%. While the majority of respondents had matric, it was interesting to observe that the combination of respondents with above matric qualifications were highest at 48.9%.

5.2 Normality Assessments of Results Distribution

Given the importance of reliability and accuracy of results, normality assessments were undertaken prior in-dept analysis of results to ensure data robustness, reliability and integrity.

Table 3. Normality tests for factors drawn: F1 Quality Driven Agile Teams, F2 Flexible Decision Making, F3 Customer-centricity Quality Improvements

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
F1_Quality Driven Agile Teams	,170	101	,000	,924	101	,000
F2_Flexible and Rapid Decision Making Cycles	,110	101	,004	,948	101	,001
F3_Customer-centric Responsive Quality Improvements	,155	101	,000	,947	101	,000

Table 3 illustrates the analysis of three main factors drawn from the survey questionnaire, in representation of variables related to quality driven agile organisations; these factors included F1: Quality Driven Agile Teams, F2: Flexible and Rapid Decision-Making Cycles and F3: Customer-centric Responsive Quality Improvements. Kolmogrov-Smirnov analysis tool was applied given the degree of freedom results being above 50. All three factors' scores were not normally distributed at significant values of Factor 1 = .000, Factor 2 = .004 and Factor 3 = .000; these were lower that the recommended sig. value of ($p \geq .05$), which implied noncompliance to assumptions of normality. Pallant (2011) however suggested. that such results should be considered reasonably normal given larger samples involving above 100 respondents. Box plot analysis were thus further conducted below for further reassurance of the distribution of results.

Figure 1. Box plot analysis of Customer-centric Responsive Quality Improvements Factor

Figure 1 demonstrated the analysis undertaken to evaluate further the normality of data distribution from the Customer-centric Responsive Quality Improvements variable drawn from the results. The box plot indicated minimal skewness with a median value of 3.500, the mean value of 3.276 and quite a little skewness of -.378, with the absence of outliers on the data distribution indicative that although the distribution resulted with skewness, it was very insignificant thereby implying normality of results.

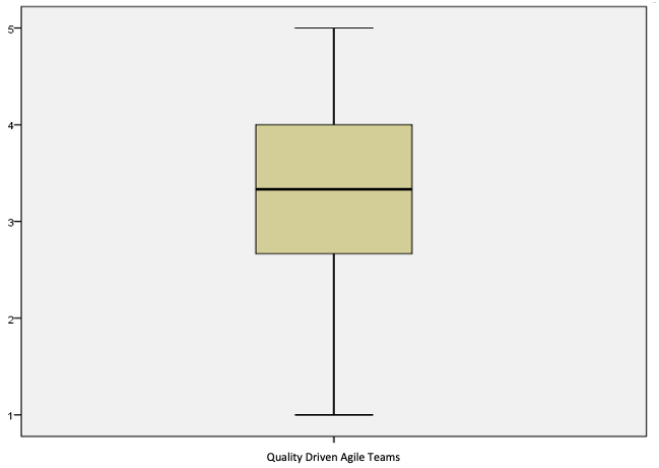

Figure 2. Box plot analysis of Quality Driven Agile Teams Factor

Figure 2 was also a demonstration of further analysis undertaken to extensively evaluate the normality of data from the Quality Driven Agile Teams factor drawn from the results. The box plot indicated a little skewness with a median value of 3.333, the mean value of 3.228 and just a little skewness of -.787, also with the absence of outliers on the data distribution indicative that although the distribution resulted with skewness, it was insignificant thereby implying normality of results as well.

5.3 Results of The Role of Continuous Quality Improvement in Shaping Agile Organisations

Table 4 reflects an analysis of the results from the survey distributed to sampled respondents across various organisations. As indicated in the methodology section, a set of survey questions were formulated with the objective of evaluating the role quality and continuous improvement practices play in influencing and enabling agile organisations.

This study took into consideration some among the significant traits of agile organisations, which included teamwork, swift decision-making cycles, change in culture, responsiveness to continually changing customer expectations, technological capability growth, customer involvement and others. The variables related to quality and continuous improvement were also taken into consideration, with the objective of evaluating their relationship and role they would have towards agile service organisations.

Table 4. Evaluating the role of CQI in shaping agile service organisations

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
1. Motivated employees provide quality on their work at all times in my organization	Count	5	9	21	38	28	101
	Row N %	5,0%	8,9%	20,8%	37,6%	27,7%	100,0%
2. Quality management improves communication at work	Count	4	10	18	49	20	101
	Row N %	4,0%	9,9%	17,8%	48,5%	19,8%	100,0%
3. Quality programs influence technological improvements in my organisation	Count	4	10	26	43	18	101
	Row N %	4,0%	9,9%	25,7%	42,6%	17,8%	100,0%
4. Quality improves management's commitment at work	Count	8	11	15	48	18	100
	Row N %	8,0%	11,0%	15,0%	48,0%	18,0%	100,0%
5. Quality initiatives enhance the efficient interaction of work processes	Count	2	10	22	50	16	100
	Row N %	2,0%	10,0%	22,0%	50,0%	16,0%	100,0%
6. Work processes are continually being improved in my organisation	Count	9	11	13	52	14	99
	Row N %	9,1%	11,1%	13,1%	52,5%	14,1%	100,0%
7. Customer involvement is encouraged at work	Count	12	13	26	42	8	101
	Row N %	11,9%	12,9%	25,7%	41,6%	7,9%	100,0%
8. Customers' requirements are identified for improvement purposes	Count	6	19	25	37	14	101
	Row N %	5,9%	18,8%	24,8%	36,6%	13,9%	100,0%
9. Employees are involved on quality improvement initiatives	Count	10	16	21	45	8	100
	Row N %	10,0%	16,0%	21,0%	45,0%	8,0%	100,0%
10. Team participation on quality is encouraged	Count	8	15	15	53	10	101
	Row N %	7,9%	14,9%	14,9%	52,5%	9,9%	100,0%
11. Quality tools encourages collaboration between teams in the workplace	Count	10	14	13	55	9	101
	Row N %	9,9%	13,9%	12,9%	54,5%	8,9%	100,0%
12. Quality initiatives empower self driven teams in the workplace	Count	7	17	23	39	15	101
	Row N %	6,9%	16,8%	22,8%	38,6%	14,9%	100,0%
13. Quality programs improve responsiveness to changing consumer expectations	Count	8	14	24	49	4	99
	Row N %	8,1%	14,1%	24,2%	49,5%	4,0%	100,0%
14. Quality initiatives optimise decision making processes within the organisation	Count	9	17	19	34	22	101
	Row N %	8,9%	16,8%	18,8%	33,7%	21,8%	100,0%
15. There is an improved culture throughout the organisation as a result of the quality management program implementation	Count	9	11	9	53	19	101
	Row N %	8,9%	10,9%	8,9%	52,5%	18,8%	100,0%

With regards to customer involvement in their organisations, 41.6% of the total respondents agreed that it was encouraged in their workplace, whilst 12.9% disagreed; in combination 49.5% both agreed and strongly agreed, whereas 24.8% both disagreed and strongly disagreed. In terms of team participation, 52.5% of respondents agreed that it was encouraged through quality initiatives, whilst 14.9% disagreed. With regards to quality initiatives empowering self-driven teams in the workplace, 38.6% of the respondents agreed, whilst 22.8% were not sure and 16.8% disagreed. Furthermore, a significant 49.5% of the total respondents agreed that quality programs augmented responsiveness to changing consumer expectations, whilst 24.2% were not clearly sure and 14.1% disagreed.

A significant majority of respondents also agreed by 33.7% and strongly agreed by 21.8% that quality initiatives optimised decision-making processes in their organisations, whilst 18.8% were neutral on the matter and 16.8% disagreed. It was also noted that a significant number of respondents agreed by 52.5% and strongly agreed by 18.8% that culture throughout their organisations improved as a result of quality programs, whilst only 10.9% disagreed and 8.9% strongly disagreed. With regards to technology, which is also a pivotal indicator of agile organisations, 42.6% of the respondents agreed that its improvements were largely influenced by quality programs, whilst 25.7% were not sure and only 9.9% disagreed.

The majority of results from table 4 generally indicated that quality focused initiatives had a positive effect on indicators related to enabling agile service organisations. This is reflected even on other indicators studied such as improvement of management commitment, whereby 48% of respondents agreed was improved as a result of quality programs, as well as efficient interaction of processes agreed to be enhanced by quality initiatives by 50% of the total respondents and other areas likewise such as continuous improvement of processes in the workplace.

6. Conclusion

This study in the main sought to establish if quality and continuous improvement could have impact towards enabling agile organisations. The agile thinking has largely been observed to be driven by Information Technology based functions as well as organisations, through implementation of the agile methodology using tools such as scrum meetings, sprints to manage project delivery and others within the systems development lifecycle. Other service-based

organisations and functions have not largely pronounced agile practices, although there may be significant activities taking place in this landscape related to agile tools. The evaluation of service organisations from a perspective of agile concepts being driven and enabled by process improvement driven techniques such as quality and continuous improvement was undertaken to determine if there is alignment drawn between the techniques agile service organisations.

The results from this study suggest that the tools of quality and continuous improvement are closely related to agile service organisations objectives and outcomes. This implies that a service organisation that drives its goals and objectives through quality and continuous improvement practices could also effectively adopt an agile business strategy, inheriting and integrating tools and techniques from quality and continuous improvement, realising even greater positive results.

Agile organisations largely focus on indicators such as collaborative teamwork, rapid decision-making cycles, technological advancements, flexibility and responsiveness to changing customer specific needs, agility in solution delivery and customer focused innovative culture. The results of the study revealed how these indicators are integral to and are enabled by the concepts of quality and continuous improvement. It is therefore recommended that service organisations focused on implementing agile business methodologies consider adopting concepts from related to quality and continuous improvement if they are to achieve much improved quantifiable results.

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Biography

Mr Mokoena is both a University of Johannesburg and Wits Business School Graduate, currently pursuing his PHD Engineering Management and employed at University of Johannesburg. He is a passionately growing research contributor, having published with institutions such International Association of Engineer's (IAENG) World Congress of Engineering, International Conference on Industrial Engineering and Engineering Management (IEEM), as well as Industrial Engineering and Operations Management (IEOM) International Conferences. He specialises in Strategy Design and Execution, Project Management, Process Engineering, Organisational Design and Development, Technology and Innovation Management, Business Analysis, Quality and Operations Management.