



## Capitalizing Lean and Agile Operations: An emphasis on improving Service Quality

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### ARTICLE INFO

### ABSTRACT

#### Keywords:

Lean Operations, Agile Operations, Service Quality,

Received: May, 16, 2023

Accepted: June, 10, 2023

Published: July, 22, 2023

Service quality is a critical factor in achieving customer satisfaction and loyalty. Lean and agile operations have emerged as two prominent approaches to improving service quality in various industries. This study explores the impact of lean and agile operations on service quality and presents key insights from prior research. This study discusses previous researches that demonstrate the positive impact of lean and agile operations on service quality. It highlights cases where organizations have successfully implemented lean or agile principles and achieved significant improvements in service quality metrics such as response time, error rates, and customer satisfaction scores. Furthermore, the study emphasizes the complementary nature of lean and agile operations considering the qualitative nature of the study. While lean operations focus on efficiency and waste reduction, agile operations address flexibility and adaptability. By integrating lean and agile approaches, organizations can achieve a balanced operational strategy that maximizes service quality and customer value.

### 1. INTRODUCTION

Organisations are increasingly adopting lean and agile operations to improve their service quality in today's quickly changing business environment. Lean operations put an emphasis on removing waste and improving processes to provide consumers with more value while using the fewest resources and costs possible (Stratton & Warburton, 2003). Organisations can improve the quality of their services by assuring timely and accurate delivery, lowering errors, and raising customer satisfaction by streamlining operations and removing non-value-added tasks. Agile operations, on the other hand, place a strong emphasis on flexibility, adaptability, and

responsiveness to shifting client needs (Leong et al., 2019). Organisations can swiftly respond to customer feedback, make improvements, and provide services that closely match customer expectations by embracing iterative and incremental techniques (Vorobeve Victoria, 2022). In the pursuit of delivering exceptional service quality, businesses are turning to lean and agile operations as powerful methodologies (Malifete et al., 2018). Lean operations aim to eliminate wasteful activities and optimize processes to provide greater value to customers while minimizing costs and resources (M. El Khatib et al., 2021; Wagner et al., 2017). By streamlining

operations, organizations can enhance service quality through efficient delivery, reduced errors, and increased customer satisfaction. Agile operations, on the other hand, prioritize flexibility, adaptability, and responsiveness to customer demands (Lyons & Ma’Aram, 2014). This approach allows businesses to quickly adjust and improve services based on customer feedback, ensuring that their offerings align closely with customer expectations (Rachid et al., 2017). The integration of lean and agile operations provides a holistic framework for continuously improving service quality, enabling organizations to stay competitive in a dynamic and customer-centric market (Christopher & Towill, 2001).

The study specifically attempts to analyse how the application of agile practises, such as flexibility and responsiveness, and lean principles, such as waste reduction and process optimisation, influence several dimensions of service quality. The study will look at how lean and agile operations affect things like the effectiveness of service delivery, the decrease of errors, customer satisfaction, and overall service performance. By conducting this study, we anticipate providing insightful

information about how lean and agile operations can improve service quality, enabling organisations to make wise decisions and implement tactics that will give them a competitive advantage in the marketplace.

2. LITERATURE REVIEW

2.1. Impact of Agile Operations on Service Quality

According to a research article about lean in service industry: a literature review presented by (M. T. Alshurideh et al., 2023; M. M. El Khatib & Ahmed, 2020) they say lean operation in service sector is the amalgamation of tools and practices which are if applied can become beneficial for companies in terms of huge profits and economic development and the authors used different approaches to study about the lean service practice like improvement of services, manufacturing, retailing approach, supply chain and market (M. T. Alshurideh, Alzoubi, El khatib, et al., 2022; M. Alzoubi et al., 2021). The authors also represented waste analysis of lean services in below table 1.

Table 1 : Types of wastes

Sl.no.	Type of wastes in service	Significances
1	Service Design waste	no response to customer needs and resulting unnecessary excess features
2	Service Item waste	flaws in service process
3	Service Ability waste	does not make full use of service capacity
4	Service Process waste	low efficiency work
5	Service Delay waste	phenomena that waiters or customers wait

This table clearly represents the wastes that occur in service industry and their importance as author also mentions the importance of lean operations in service sector because the manufacture who make product need to improve and sustain the services that directly affect customer satisfaction lean operational strategy means the fast introduction of service to customer with cost effective mechanism (A. I. Aljumah, Shahroor, et al., 2022; Amiri et al., 2020; Krishnamurthy & Yauch, 2007). There is strong relationship shown in this article about the lean operations and the service industry as authors have provide valuable insight as how much lean is

important in service sector as it helps in redefining the value (Kassem & Martinez, 2022), and the waste concept on the characteristics of service sector like imperishability, intangibility, lack of the ownership and inseparability (W. Ahmed & Huma, 2021; M. El Khatib, Hamidi, et al., 2022). Author has also identified important point in this research which is lean operation is not only applicable to manufacturing sector lean operational strategy can be implemented in service sector providing maximum customer satisfaction as the methodology author adopted in this paper is field study about the practicing of lean operations (A. H.

Al-Kassem et al., 2022; M. T. Nuseir et al., 2021). Another author has helped in better understanding of designing the lean process with improved service quality (M. T. Alshurideh, Alquqa, Alzoubi, Al Kurdi, & Alhamad, 2023; D. M. M. El Khatib, 2015). Authors have applied their study on the financial services and they say this is the “Age of customers” and they demand best product and service and organizations are doing their best to change the operational structures in order to meet the demands of customers and this article tells us that integration of lean design depends on two of the features one is the integrated lean design should be able to do the services should have some back office activities where the empty place of versatile employees can be filled (Almasaeid et al., 2022; H. Alzoubi et al., 2022). However, this study is applied on the financial services that include banking sector as well the empty place in back office can be filled whenever there are no customer in front desk in banks but some back office activities are very hard to be performed where there is integrated services like highly specialized experience and equipment (Nadzri et al., 2023; M. T. Nuseir et al., 2023).

Authors say integrated lean design also requires short switching time as well as smooth switching innovations in design of workplace and employees technology has decreased the switching time for example there is a community bank has opening of job of banking specialist that is combination of both teller and the platform employee. Now the banking specialist and their workspace has been redesigned in lean operation now the employees can easily switch themselves between the back office activities as well as they are also facing customers (M. T. Alshurideh, Alzoubi, Al Kurdi, et al., 2022; H. M. Alzoubi, Ghazal, et al., 2022; M. T. Nuseir & Aljumah, 2022).

With advancement in workplace environment and use of technology authors say that the integrated lean operation has better potential to satisfy the demanding customers more importantly it achieves high service levels with low cost (M. El Khatib, Alabdooli, et al., 2020; Sakkthivel et al., 2022; Tariq, Alshurideh, Akour, & Al-Hawary, 2022).

Moreover, philosophy behind lean practices and the application in the service sector presented by (Alshawabkeh et al., 2021; M. Alshurideh et al., 2023) authors say that lean operations or bringing

lean practices in an organization does not require specific tools (H. M. Alzoubi, Kurdi, et al., 2022; Hani Al-Kassem, 2021), methods or model but they are designed according to the situation when lean operations are applied in service industry it can bring big economic change as it enhances the services and minimizes the costs and saves time author says that lean philosophy was designed by a Japanese back in 50's and is now being widely used by organizations the use of lean practices is common in manufacturing industry but this phenomenon is now being applied to service quality as well which is new with some limited methods and approaches therefore author says there is still need of some strategies and technologies for the use in service sector as service quality and service sector accounts half of the gross domestic product (Lee et al., 2023; Louzi, Alzoubi, El Khatib, et al., 2022).

Author says that lean service is the standardizable of the system of the services in operations made only by the activities that are generating value for the customers in order to meet the expectations of customers regarding price and quality (A. H. Al-Kassem, 2017; Aldhaheri et al., 2023).

(M. T. Alshurideh, Alzoubi, Ghazal, et al., 2022) observed a strong relationship between the lean operations with the service sector as customer comes first and the employees who are delivering the service as in service sector manpower is the most important factor in cost of the doing of job as service quality in service are strongly depends on the human factor and the applications of lean operational strategy (M. T. Alshurideh, Alquqa, Alzoubi, Al Kurdi, & Hamadneh, 2023; M. M. El El Khatib & Opulencia, 2015; M. T. Nuseir, 2021). In lean initiative according to author any supplier or customer can be targeted different authors have designed different models for lean operations practices the services sectors providing services and the ones who have applied lean principles include health sector, finance sector that includes banks and financial institutions (G. Ahmed et al., 2022).

## 2.2. Impact of Lean Operations on Service Quality

The majority of the management people agrees that agility has been looked over, and the organizations are trying their best to implement it (Bawaneh et al., 2023). Initially built on the value or better known as an agile manifesto, there has

been a lot of evolution in the method. With the development of the IT world, there has been a huge improvement in the quality of services provided by the companies (A. I. Aljumah, Nuseir, et al., 2022a; M. T. Alshurideh, Obeidat, et al., 2022; Louzi, Alzoubi, Alshurideh, et al., 2022).

The principle of the agile operation is used in maintaining the software system, and it is much different from that of a traditional environment (H. Al-Kassem, 2014; Blooshi et al., 2023). With the change in technology, there has been a vast change in the principles and value methods of Agile that helps in increasing the quality of service (A. Aljumah et al., 2020; Gulseven & Ahmed, 2022; Tariq, Alshurideh, Akour, Al-Hawary, et al., 2022). The relationship is that the more focused on the agile principles, the higher will be the quality of service (A. Al-Kassem et al., 2013; M. Alshurideh et al., 2022; M. El Khatib, Alzoubi, et al., 2022). The value follows that exhaustive documents less than operational software. Focusing more on the collaboration with the customers as well as making and implementing more changes than planning out (I. A. Akour et al., 2022; M. T. Nuseir & Aljumah, 2020).

With deep analysis, organizations are required to focus more on the satisfaction of the customers, and the business should adopt necessary changes that will increase the quality of services (E. Khatib et al., 2021; Mat Som & Kassem, 2013). There is a need to adjust the behavior of the team and also maintain the highest standards of technical quality (H. M. Alzoubi et al., 2019). Favoring the oral is much important; therefore, it is required to conduct meetings and direct contact with the workers (Khan et al., 2022). Motivation plays an important role if the workers become motivated, then automatically the quality of services is bound to increase (I. Akour et al., 2021). Implementing agile operation is not an easy task as team cooperation is very important, which will upgrade the quality of services (Al-Kassem et al., 2012).

The framework of agile operation aims at modernizing the IT Services Management and values the business-driven way (H. Alzoubi et al., 2020; M. El Khatib, Nakand, et al., 2020). There has been an increase in the amount of agile servicemen management in the industrial sector as quality plays an important role for the customers (H. M. Alzoubi, Sahawneh, et al., 2022; M. T. Nuseir, 2020).

Agile emphasizes the core value of the IT services and is likely to embrace and instil in their culture. There is no suggestion that the efforts of investments have already made servicemen management simple (M. T. Alshurideh et al., 2023). Agile operation recommends doing all kinds of activities to make the item look amazing (Aziz et al., 2023).

In the process of implementing agile operation (Alhamad et al., 2021), it is important to step back and assess where the problems are coming from and help is providing possibility in fixing the errors (E. Khatib et al., 2022). The agile operation also helps in going a step back and understanding the defects in the service. Agile soft benchmark is required to be used by the service management in the process of determining if the programs are rewarding the correct behaviour, achievement and initiative (I. Akour et al., 2023). It is considered to be a matter of semantics, and its value position lies (A. Al-Marouf et al., 2021; Gaytan et al., 2023).

Moreover, the line id provided that will enable the customers to get their services quickly, innovatively and responsively (A. I. Aljumah et al., 2021b; M. M. El Khatib & Ahmed, 2018). Agile is recognized to be the first to value a service management objective. The gap between the Agile service and management is required to be at par to expand the IT vocabulary with the process of introduction of new technology in the field of multiple disciplines (R. S. Al-Marouf, Alnazzawi, et al., 2021). Agile supports the service quality by defining dignity, which defines that every customer service agility usually stands for the fast response as well as being at the top of answering the quarries to the customers (Ghazal, Hasan, Ahmad, et al., 2023). It mainly defines what matters the most in the field and therefore reminds the end goal regularly (H. M. Alzoubi et al., 2020).

Business organizations are required to determine the different aspects of their operation such as sales, marketing as well as defining the need in becoming more agile (Blooshi et al., 2023). Articulating the business strategies of the organization is considered to be more important (M. Nuseir & Elrefae, 2022; Yasir et al., 2022). Therefore, examining their relationship between the IT and the business and assessing the different impact of the digital transformation in the functioning on non-IT (R. S. Al-Marouf, Alhumaid, et al., 2021; H. M. Alzoubi, Alshurideh, et al., 2022).

It is important for every company to develop a clear and measurable goal which the entire organization is required for the organization to improve the quality of service provided by the company (A. I. Aljumah, Nuseir, et al., 2022b). Milestone stones are bound to vary as the decision is towards better, cheaper, faster and happier (Arshad et al., 2023). The main priority of a company is to satisfy its customers; therefore, it is required to implement all kinds of strategies that will foster customer satisfaction (I. Akour et al., 2022; Varma et al., 2023). This will create a positive impression on the company's offerings.

The company is required to take the feedback of the customers, which will create a good impression and will move towards winning proofs of concept (A. I. Aljumah et al., 2021a; H. Alzoubi & Ahmed, 2019). The development of a clear strategy guides the actions of the company. Therefore, it delivers quality products to its customers. The technological infrastructure helps in the process of agile work (R. S. Al-Marroof, Alahbabi, et al., 2022; M. El Khatib, 2022; Mubeen et al., 2022).

### *2.3. Relationship of lean and Agile Operations with Service Quality*

The relationship between lean and agile operations and service quality is significant and intertwined. Both lean and agile methodologies aim to improve operational efficiency, customer satisfaction, and overall service quality through different approaches (Abudaqa et al., 2022; Ghazal, Al-Dmour, et al., 2023).

Lean operations focus on streamlining processes, reducing waste, and eliminating non-value-added activities (M. T. Nuseir, Aljumah, & El-Refae, 2022). By adopting lean principles such as just-in-time production, continuous improvement, and standardized work, organizations can enhance their service delivery processes (R. S. Al-Marroof, Alnazzawi, et al., 2022). Further, lean operations enable better resource utilization, minimize errors, and ensure timely and consistent service provision, leading to improved service quality (H. M. Alzoubi, Ahmed, et al., 2022).

Agile operations, on the other hand, emphasize flexibility, responsiveness, and adaptability to changing customer demands and market conditions (M. T. Nuseir et al., 2020). Agile methodologies, commonly used in software development and project management, encourage

iterative and incremental work (Farrukh et al., 2023), cross-functional collaboration, and customer feedback. By embracing agility, organizations can quickly respond to customer needs, customize services, and deliver value in a fast-paced and dynamic environment (A. I. Aljumah, Nuseir, et al., 2022c; Kurdi, Alshurideh, et al., 2022). This responsiveness and customer-centric approach directly contribute to higher service quality (Ghazal, Hasan, Abdullah, et al., 2023).

When lean and agile principles are combined, organizations can achieve a balance between efficiency and flexibility, leading to optimal service quality (Al-Awamleh et al., 2022). The integration of lean and agile practices enables organizations to eliminate waste and non-value-added activities while remaining nimble and responsive to customer requirements (H. M. Alzoubi, In'airat, et al., 2022). This integrated approach allows for rapid process improvement, reduced lead times, increased productivity, and enhanced customer satisfaction (M. M. El Khatib & Ahmed, 2019; M. T. Nuseir, Aljumah, & El Refae, 2022b).

Moreover, both lean and agile operations share common underlying principles such as employee empowerment, continuous learning, and a focus on customer value. These principles contribute to a culture of service excellence, where employees are engaged, motivated, and empowered to deliver high-quality services to customers (G. Ahmed & Nabeel Al Amiri, 2022; Kurdi, Alzoubi, et al., 2022). It is important to note that the application of lean and agile methodologies in service organizations may vary depending on the nature of the services provided (M. M. El Khatib et al., 2019). While lean principles are often associated with manufacturing and production processes, they can be adapted to service contexts by emphasizing process efficiency, waste reduction, and standardized service delivery (A. Aljumah et al., 2023). Agile principles, on the other hand, are highly relevant in service industries characterized by rapidly changing customer demands, such as software development, marketing, and consulting (Abudaqa et al., 2021; I. Akour et al., 2022; Ghazal, Hasan, Alzoubi, et al., 2023).

However, the relationship between lean and agile operations and service quality is symbiotic (M. El Khatib et al., 2021). By combining lean and agile principles, organizations can optimize their

operations, improve customer satisfaction, and deliver high-quality services that align with customer needs and market dynamics (Aityassine et al., 2022; M. T. Nuseir, Aljumah, & El Refae, 2022a). The integration of these methodologies allows organizations to achieve operational excellence while remaining agile and responsive in an ever-evolving service environment.

### 2.3. Research Framework

Figure 1: Research Framework

### 3. METHODS

The study was conducted using a systematic methodology in accordance with several prior contributions. In order to fill in the gaps found during the systematic literature review, the results of this study were developed. Country-specific primary databases. During the search process, papers were included in papers while others were excluded. The search was related to the keywords (Lean and Agile Operations). The inclusion criteria limited the research to a handful since their titles and reference keywords matched popular search terms. The authors chose studies from reputable publishers and peer-reviewed journals with high impact factors.

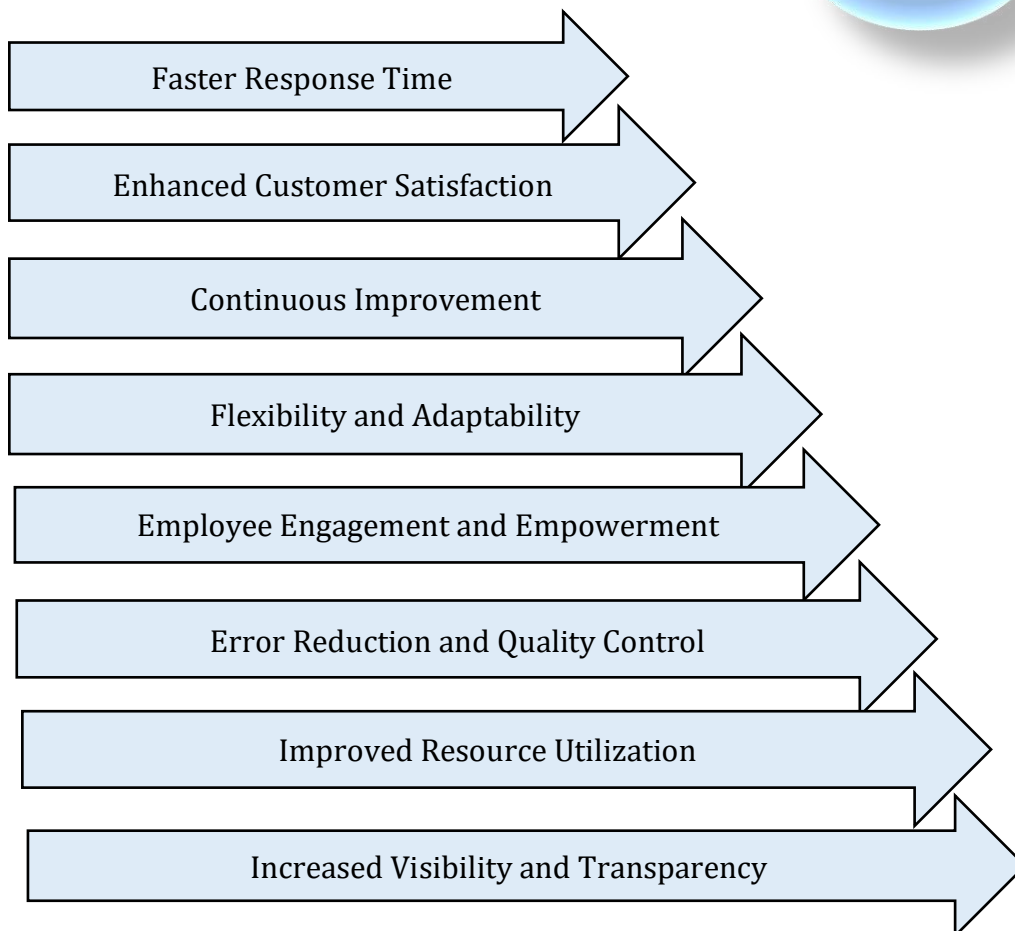
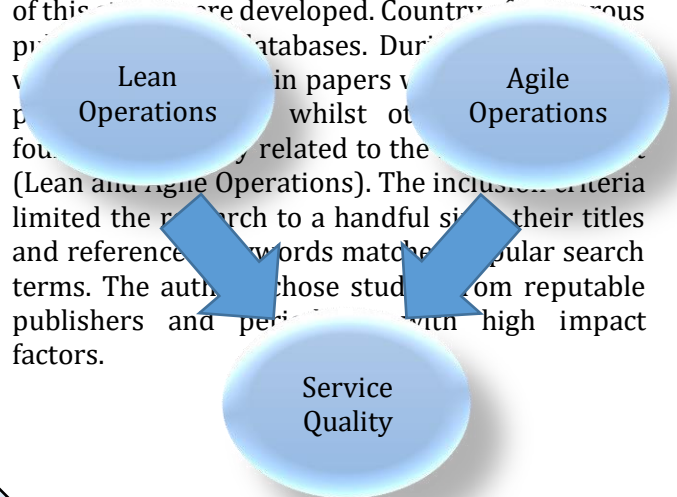


Figure 2

#### 4. FINDINGS AND DISCUSSION

This study presents a conceptual and theoretical insights evidencing the Lean operations have increased the effectiveness of service delivery. Organisations were able to shorten lead times, boost productivity, and improve overall operational performance by removing waste, streamlining procedures, and allocating resources optimally. This led to quicker and more dependable service delivery, which in turn enhanced service quality. In order to reduce errors and faults in service processes, lean operations were essential. It has noticed the organisations saw a large drop in service errors after adopting standardised procedures, error-proofing methods, and continuous improvement practises. This improved total service performance by raising service quality while lowering rework and customer unhappiness. However, Customer satisfaction levels were significantly boosted by agile operations, which are known for their flexibility and customer-centric mindset. Organisations were able to more successfully adjust their services to suit customer expectations by actively incorporating customer feedback and responding quickly to changing customer needs. Higher customer satisfaction scores and increased customer loyalty were the outcomes of this.

Further more, the study emphasized the Lean and Agile operations can have several positive effects on service quality. Here are some key ways in which these methodologies can improve service quality:

*Faster response times:* Lean and Agile operations emphasize speed and efficiency in delivering services. By eliminating waste and streamlining processes, organizations can respond to customer needs more quickly, reducing waiting times and improving overall service responsiveness.

*Enhanced customer satisfaction:* The main focus of lean and agile operations on understanding customer requirements and delivering value accordingly. This customer-centric approach leads to better alignment between service offerings and customer expectations, resulting in higher levels of customer satisfaction.

*Continuous improvement:* Both Lean and Agile advocate for continuous improvement as a core principle. Through regular evaluation, feedback loops, and iteration, organizations can identify areas for improvement and implement changes to enhance service quality. This iterative approach allows for ongoing refinement and optimization of service delivery processes.

*Flexibility and adaptability:* Agile operations prioritize adaptability to changing customer demands and market conditions. By being able to quickly adjust and realign resources, organizations can meet evolving customer needs more effectively, thereby improving service quality.

*Employee engagement and empowerment:* It also encourages employee involvement and empowerment. By involving employees in decision-making processes and providing them with the tools and authority to make improvements, organizations can tap into their expertise and creativity, resulting in higher service quality levels.

*Error reduction and quality control:* Lean methodologies aim to eliminate waste and errors from processes. By implementing standardized work procedures and error-proofing techniques, organizations can reduce the likelihood of errors and defects in service delivery, leading to higher service quality standards.

*Improved resource utilization:* Lean operations emphasize efficient resource utilization by eliminating non-value-added activities and optimizing resource allocation. This optimization allows organizations to allocate their resources more effectively, ensuring that the right resources are available at the right time to deliver high-quality services.

*Increased visibility and transparency:* Lean and Agile methodologies promote transparency and visibility across the organization. This transparency enables better tracking and monitoring of service delivery processes, making it easier to identify bottlenecks or areas of

improvement. By having a clear view of operations, lean and agile operations have a beneficial effect on service quality, according to research findings, but there are some essential limitations and restrictions :

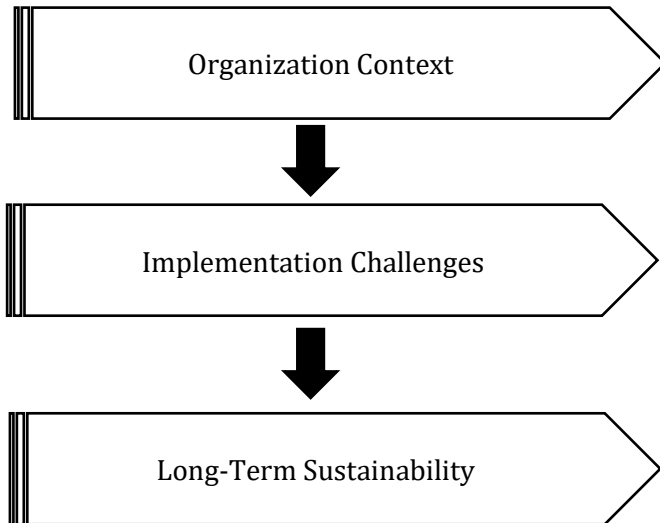


Figure 3

- **Organizational Context:** The effectiveness of lean and agile operations may vary depending on the specific organizational context and industry. Factors such as organizational size, structure, culture, and customer base can influence the extent to which these operations impact service quality. Therefore, it is crucial to consider these contextual factors when interpreting the research findings.
- **Implementation Challenges:** Implementing lean and agile operations can be complex and challenging. Organizations may face resistance to change, resource constraints, and difficulties in aligning processes and systems. These implementation challenges can potentially hinder the full realization of the benefits and impact on service quality. Future research should delve deeper into the factors that influence successful implementation and explore strategies to overcome implementation barriers.
- **Long-Term Sustainability:** While lean and agile operations have demonstrated positive impacts on service quality, it is essential to assess their long-term sustainability. The continuous

improvement efforts associated with lean operations and the adaptability inherent in agile operations need to be sustained over time to maintain the desired level of service quality. Future research should investigate the factors that contribute to the sustainability of lean and agile operations and their long-term impact on service quality.

## 5. CONCLUSION

The outcomes of this study show that adopting agile practices like flexibility and responsiveness as well as lean concepts like waste elimination and process optimization greatly improves service quality. Organizations can increase the effectiveness of service delivery by reducing wasteful activities and streamlining procedures through the use of lean operations. As a result, services are delivered more quickly and consistently, ultimately raising service quality. By implementing standard operating procedures and continuous improvement techniques, lean operations also aid in the reduction of errors and the improvement of quality. This results in fewer errors, reduced rework, and higher overall service performance.

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