Impact of Organizational Barriers, Inefficiencies, and Support on Digital Transformation: Perception on Quality 4.0

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Abstract
In this Quality 4.0 era, many organizations strived to implement and improve the efficiency of technology consumption in their organization. Modern technology is changing so rapidly that digital transformation is now widely understood. However, some organizations are still reluctant to start the transition as it could affect their ability to compete with others. This study aims to examine the impact of organizational barriers, inefficiencies, and support on digital transformation and to determine whether digitization can maintain or improve organizational performance. This study used a quantitative technique with a total of 89 respondents. The study method is quantitative through e-survey data collection analyzed with IBM SPSS 25 software. Multiple linear regression is used to analyze the result to achieve the objective stated. The results showed that most respondents felt that technology helped them build confidence in completing their tasks. However, some improvements are still needed to keep up with future technological advances, as some respondents still need more confidence in working with technology to complete their work. In addition, most respondents believe that competent employees with the required skills are the most crucial success factor of digital transformation in the organization.

Keywords: Quality 4.0, digital transformation, modern technology.

Introduction
Today, when the world is constantly changing, the human workforce increasingly relies on technology to ensure the efficiency of job development. Furthermore, Ralea et al. (2019) state that companies have implemented technologies since the world has been widely introduced and familiarized with Industry 4.0, also known as the fourth industrial revolution, which is more exposed to technologies such as the Internet of Things (IoT), cloud, and robotics. However, for any organization to continue in the sector, it must adapt to market and client behavior changes. For example, Nokia's loss in the mid-2000s was due to their hubris of prior accomplishments and unwillingness to open to changes in society and the environment with the internet background (Bouwman et al., 2014). The relevance of the organization's adapting skills in the internal and external market was explained in both researches by Ralea et al. (2019) and Ramlawati et al. (2018), which it is a success factor for the organization to provide quality products or services which are competitive, and to capitalize on all potentials that arise because

of the internal and external environment. In today's technologically advanced economy, one option for creating value and strengthening a business's competitive edge is digital transformation, which involves using new technological capabilities for the organization (Gebayew et al., 2018).

Changes in technology and consumer behavior have undoubtedly impacted organizational work development to adapt to the current environment. Despite their recognition of the need for change, they tend to overlook the most important process in the work frame, which is the quality of the work progress in the organization. Suppose the organization continues to believe that it can simply digitalize its transformation. In that case, this might lead to issues with proper utilization and the long-term benefit of the technology utilized in any organization. Several studies have indicated the importance of the digital revolution during this current era. However, there is limited evidence that the transformation genuinely assists the organization's performance. Few studies have examined the Quality 4.0 features that help or hinder digitalization. As a result, this research is being undertaken to address a gap in understanding the hindrance in the digitalized transition.

Transitioning an existing work frame into a new work plan will undoubtedly require some work frames. As a result, a few research questions were included in this study. There are: Does technology help users improve the quality of their work? Why are there still organizations that refuse to go digital? And What are the critical factors in achieving digitalized transformation goals? By emphasizing the importance of digital transformation, there will be a broad understanding and ideas on the impact of strategies in the transformation to a new system of work in the organization to improve the quality and acceptance of the organization in a new framework. This study examines the impact of organizational barriers, inefficiencies, and support on digital transformation. Therefore, this research includes information on the obstacles and inefficiencies in digitalized transition, providing insight into which solutions are appropriate for the organization's future scenario. This research will significantly assist any organization considering becoming involved in the digitalized business. However, organizations currently involved in digitalization may benefit from evaluating their existing operational efficiency by examining this research.

Literature Review

This section provides the necessary background for further discussions on Quality 4.0. This section's review comprises three sub-sections that discuss digital transformation and the barriers and inefficiencies associated with digital transformation.

Quality 4.0

Quality 4.0 refers to using Industry 4.0 technology in quality management methods and systems. It is a subset of Industry 4.0 that aims to reduce costs, improve quality and increase the efficiency of quality operations (Radziwill, 2018; Ramezani & Jassbi, 2020; Emblemsvåg, 2020; Maganga & Taifa, 2022). According to ASQ (2022), Quality 4.0 is a term that refers to the future of quality and organizational excellence, closely aligning quality management with Industry 4.0 to ensure efficiency and performance and to integrate data and technology and use them to empower employees' creativity and improvement of quality performance. From an organizational point of view, Javaid et al. (2021) believe that Quality 4.0 should result in continuous improvement that supports a competitive strategy focused on quality and innovation.

Digital Transformation

Digital transformation refers to the rapid technological advances to undertake corporate operations, enhancing organizations' productivity, procedures, practices, and strategies in response to the expanding effects and opportunities of data and computer technologies (Betz et al., 2016; Sousa & Rocha, 2018). In addition to the definitions, Al-Ruithe et al. (2018) discovered that the concept of "going paperless" may be defined by the phrase "digital transformation," which affects micro-enterprises and whole societal sectors, including politics, mainstream media, entertainment, medical, and science simultaneously. Digital technologies enable many advances in the execution of present activities or processes, along with entirely different practices, methods, and products. The process of converting a current existing operation into a digital realm without compromising its value or even the personnel involved is known as digitalization (Henriette et al., 2016; Parviainen et al., 2017).

Digital transformation is more than simply technology; it also includes the corporate strategy to create a new culture within the organization and examine the potential presented by technology (Schwertner et al., 2017; Machado et al.,2019; Logunova et al., 2020). To adjust to these various modifications, the organization will need to undergo a culture change affecting employees and management, highlighting the importance of product creation, supply chain performance, production efficiency, safety, and quality (Ralea et al., 2019).

A comprehensive digitized revolution necessitates the most efficient reengineering and enhancement of procedures. Every organization's digital transformation tends to be unique, making it tough to give a blueprint for everyone (Schwertner, 2017). Organizations must set a comprehensive vision for the organization and clarify everything they want to accomplish, how competitive strategies can gain from digitalization, and what improvements must be implemented. Organizations must understand and evaluate the necessary new skills and knowledge to fulfill the role needed by employers to make the most use of digitalization (Schwertner, 2017; Machado et al., 2019; Elg et al., 2021). According to Parviainen et al. (2017), there are four levels at which developments in the digitization industry may be seen in Figure 1.
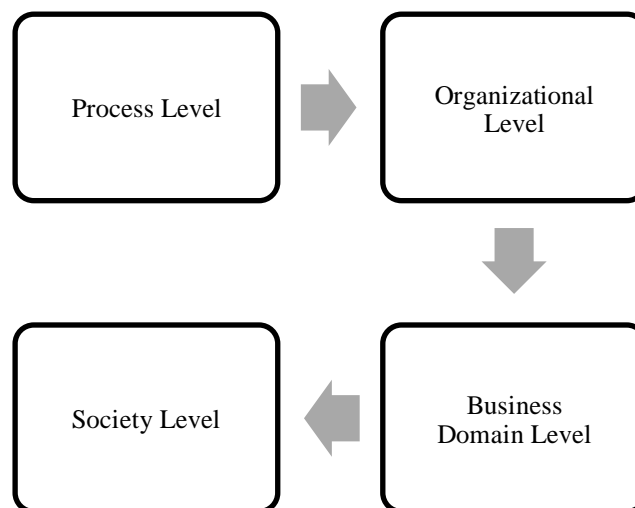

Figure 1: Level in Digitalization Industry (Parviainen et al., 2017),

As shown in Figure 1, the first level is the Process level, which alters how job actions are handled by introducing new digital tools or digitized formerly manual jobs. The next level is the organizational level, where innovative methods of supplying existing products and recent acquisitions allowed by digitalization are implemented. The third level is the business domain level, which addresses the requirements of shifting responsibilities and value chains. Finally, they must reshape job styles, competencies, and infrastructure at the societal level to accommodate digitalization.

Furthermore, technologies signified an advantage for the organization to adapt to the changing industrial market demands. Those organizations that had implemented technologies such as the Internet of Things, Big Data, Cloud, and others had a greater chance of being financially beneficial on average, had additional profitability, and gained a more significant market capitalization than competitors who did not have a clear vision (Ralea et al., 2019; Schwertner. 2017). The organization has implemented and is using a variety of current technologies. Each of the technologies had its capabilities, functions, and benefits. For example, Cloud Infrastructure as a Service (IaaS) is a type of Cloud Computing Software that can profit from exposure to cutting-edge technology while also lowering overall costs.

Barriers and Inefficiencies Associated with Digital Transformation
Digitalization incorporates different knowledge fields, modern digital technologies and tools, and future relationships between individuals from many sectors. Cooperation that arises within sectors and industries throughout digital transformation processes helps organizations develop innovative ideas and build better competitive positions (Andersson et al., 2018). Sebastian et al. (2017) also stated that most organizations have yet to confront difficulty in determining how to access the many sorts of worth these technologies might provide. As a result, building a digital transformation plan that capitalizes on this potential is also a challenge since it is a strategic approach influenced by digital technology that attempts to give extraordinary skills to adapt to ongoing market shifts.

Without a complete evaluation of what current digital technologies must provide, organizations often believe that whatever application could result in a digital transformation, but that is not the case. Many CEOs and managers make random organizational judgments concerning the use of digital technology, and as a result, they struggle to keep competitiveness, regardless of expenditures (Carvalho, 2021). Many organizations are concentrating on the best technology they have acquired. However, they still need the competencies and skills to use these technologies effectively to generate new or increase current value (Van der Bel, 2018). This issue should be addressed with greater intensity since, while digitalization may improve the operations of any organization, it also exposes it to the risks of cyber-attacks (Moşteanu, 2020). Underprepared organizations are the primary cause of digital transformation failure or slow progress (Gupta, 2018). Furthermore, digital transformation involves several activities to effect structural and process adjustments in organizations (Jöhnk et al., 2020). Organizations, for example, establish new positions and duties, such as the top digitalization officer, or create new organizational entities for trial and digital invention, such as digital units (Raabe et al., 2020; Hartl, 2019).

Employee involvement is one of the causes of this failure (Hughes, 2017). A limited number of workers' separated insight and desire to embrace digital technology to create new organizational value is insufficient. Every person in the organization must be encouraged to take advantage of the potential provided by digital technology. Lack of flexibility is another issue for digital transformation failure or poor performance (Gupta, 2018). According to the study by Keyes (2000), the dal transformation may benefit every employee in an organization. However, individuals are bothered by any shift, positive or negative, because every human

needs constancy. This might be related to Gupta's (2018) research, which said that workers are hesitant to engage in digital transformation since those changes are accompanied by changes in work responsibilities, duties, and so on. They have become accustomed to their routines; therefore, they are terrified of unexpected and unsatisfactory results. An example was given in the research by Andersson et.al. (2018), stating that organizations must transition from product-based to service-based business strategies, indicates that inconsistencies will develop and complexity will need to be resolved. According to Agarwa (2020), generating the advancement and forward-thinking involved in challenging a traditional organizational model and traditional working habits is typically the most critical barrier to digital transformation.

Table 1: Barriers and Inefficiencies of Digital Transformation

Researcher	Barriers and Inefficiencies
Gupta, S. (2018).	• Unclear vision and purpose of the digital transformation • Management's lack of awareness, expertise, and engagement in digital transformation • Inadequacy of organizational capabilities • Lack of digital leadership qualities such as foresight, technological awareness, open-mindedness, and cooperation • A rigid organizational environment • Employee participation and commitment are lacking. • Employees' reluctance to transformation
Kohnke, O. (2017)	• Lack of intensity • Unclear roles and responsibilities of employees • Unadjusted and subject to a rigorous organizational culture • A scarcity of internally talented individuals • Unable to respond quickly • Failure to develop a culture of experimentation and innovation • Rigid operational processes

Table 1 displays the barriers and inefficiencies highlighted in various studies. Based on the table, we can infer that there are few points of agreement on the problems. For example, both researchers agreed that one of the issues is the restrictive organizational environment, which is not flexible in adjusting to different cultures.

In this study, three research hypotheses were implemented in engaging with this study based on the research question. The hypothesis was tested to see if the barriers, inefficiencies, and support encountered influenced the outcome of the digital transformation.

H1: Organizational barriers negatively influence the outcome of digital transformation.

H2: Organizational inefficiency negatively influences the outcome of digital transformation.

H3: Organizational support positively influences the outcome of the digitalized transformation.

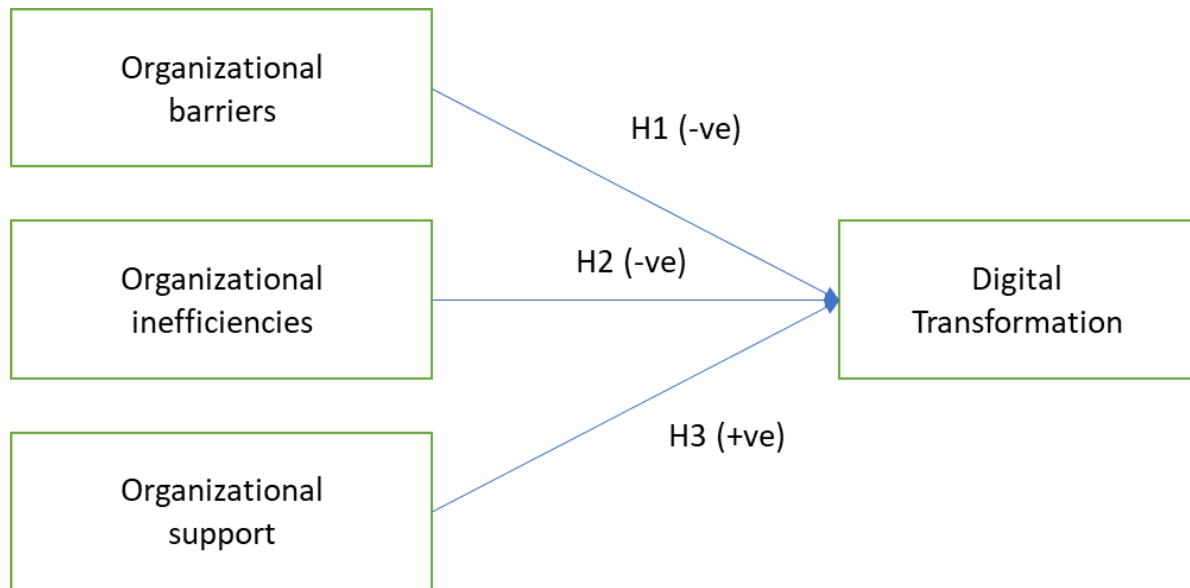From the research hypothesis, this study comes out with the following framework:

Figure 2: Conceptual Framework

Methodology

Sampling

A subset of the population of interest in a research project is usually more practical. It enables results to be obtained quickly at a low price than directly contacting each participant (Turner., 2020). However, for proper analytical study, the eligible responder must be over 18 and have frequent or professional interaction with technology and working in Malaysia. For this study, a non-probability convenient sampling technique was utilized for data collection. A non-conventional approach was applied in an online web-based, where the online survey was distributed from April until June 2022 and targeted respondents working within the areas of the Klang Valley. Klang Valley is an urban area in Malaysia, located in Kuala Lumpur and in cities in Selangor. In addition, to attain a statistically significant sample size for this study, an analysis utilizing the G-Power Analysis software was conducted to identify the minimum number of respondents required. The researchers used G-Power 3.1.9.7 application (Faul et al., 2007 & Ramayah et al., 2018). Cohen's (1988) f^2 of 0.2, 0.5, and 0.8 for small, medium, and large effect sizes were followed in this research. With the involvement of three (3) predictors, the study determined that a minimum sample size of Eighty-four (84) was needed to create a power of 0.95 with medium effect size $f^2 = 0.2$ under a two-tailed test.

With the expansion in the number of technological platforms and the industry's competition, many companies have considered converting the way they run their organizations eagerly without consideration for the efficiency of the operation. As a result of this circumstance, the purpose of this research is to examine the impact of organizational barriers, inefficiencies, and support on digital transformation, as well as to emphasize the validity of digitalization to maintain or improve the organization's efficiency and operational performance.

Statistical Technique

Descriptive statistics are used to describe the basic features of the data in a study. The collected data will be analyzed using the summary section of the Google Form. Besides, Statistical applications that as IBM SPSS 25 have been utilized to evaluate the questionnaire. According to Fakir (2016), quantitative data analysis is a structured approach for examining numeric value features through gathering, evaluation, and tallying (i.e., quantities). The data will be analyzed depending on the demographics of the respondents and other pertinent research topics.

Three variables are included in this study: organizational barriers, organizational inefficiencies, and organizational support. This study performed multiple linear regression using IBM SPSS 25 to assess the impact of administrative obstacles, inefficiencies, and support toward digital transformation in the organization.

Multiple linear regression is a quantitative statistical technique used to examine the contribution of more than one independent variable to the dependent variable. Here is the general multiple linear regression model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n + \varepsilon$$

In this equation, Y represents the dependent variable, X_1, X_2, $\ldots$, X_n represents the independent variables, ε is the error term while the β's are the regression coefficients with β_0 being the constant term. The first step procedure for applying this method is to examine its assumptions. Four conditions must be satisfied to ensure that the results of multiple regression analysis are accurate and valid. The following are the assumptions (Zulkifli et al., 2019; and Jamian et al., 2020):

a) The values of the residuals are normally distributed.
b) The values of the residuals are independent.
c) There is no multicollinearity.
d) There is no outlier in the dependent variable.

Results and Discussions

Descriptive analysis

The survey data collected were addressed in this section about the research purpose of the study. The survey received 89 responses during the allotted time, with 51.7 percent female and 48.3 percent male respondents. For the descriptive analysis, the result shows that the primary age group of responders is 40-49 years old and accounts for 27%, while the minority age group is 18-20 years old and accounts for 4.5%. The demographic profile of respondents is shown in Table 2.

According to the survey data obtained, most of the respondents are currently working with the technology installed in their organization, as shown in Table 3. As shown in Table 4, most of their organizations have deployed applications on a cloud infrastructure. 37.1 percent in the private cloud and 23.6 percent in the public cloud. This shows that more than half of the organizations involved were exposed to technology compatible with current quality performance.

Table 2: Demographic Profile of respondents

Category	Type/Group	No. of respondent	Percentage (%)
Gender	Female	46	51.7
	Male	43	48.3
	Total	89	100
Age of Respondent	18-20	4	4.5
	21-29	21	23.6
	30-39	17	19.1
	40-49	24	27.0
	>50	23	25.8
Occupation	F&B Services	17	19.1
	Finance/Banking	15	11.2
	Retail	5	5.6
	Hospitality	6	6.7
	Healthcare	6	6.7
	Technology	6	6.7
	Education	21	23.6
	Manufacturing	5	5.6
	Other	13	14.6
Organization size	1-99	65	73.0
	100-200	13	14.6
	201-400	1	1.1
	401-600	6	6.7
	>600	4	4.5

Table 3: Organization's Technology Usage Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Doesn't work with technology	1	1.1	1.1	1.1
	Doesn't fully work with technology	23	25.8	25.8	27
	Working with technology	65	73	73	100
	Total	89	100.0	100.0	

Table 4: Cloud Infrastructure Deployment Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes- on IaaS, but not in our private cloud	21	23.6	23.6	23.6
	Yes-on our private cloud, but not in the public cloud	33	37.1	37.1	60.7
	Yes-on both our private cloud and IaaS	12	13.5	13.5	74.2
	No-we still deploy on traditional server/data centre infrastructure	23	26.8	25.8	100.0
	Total	89	100.0	100.0	

Meanwhile, as shown in Figure 3, most respondents have utilized the technology for documentation, decision-making, and data sharing. As a result, customer experience is vital in the organization so that the user's use of technology is not complex.
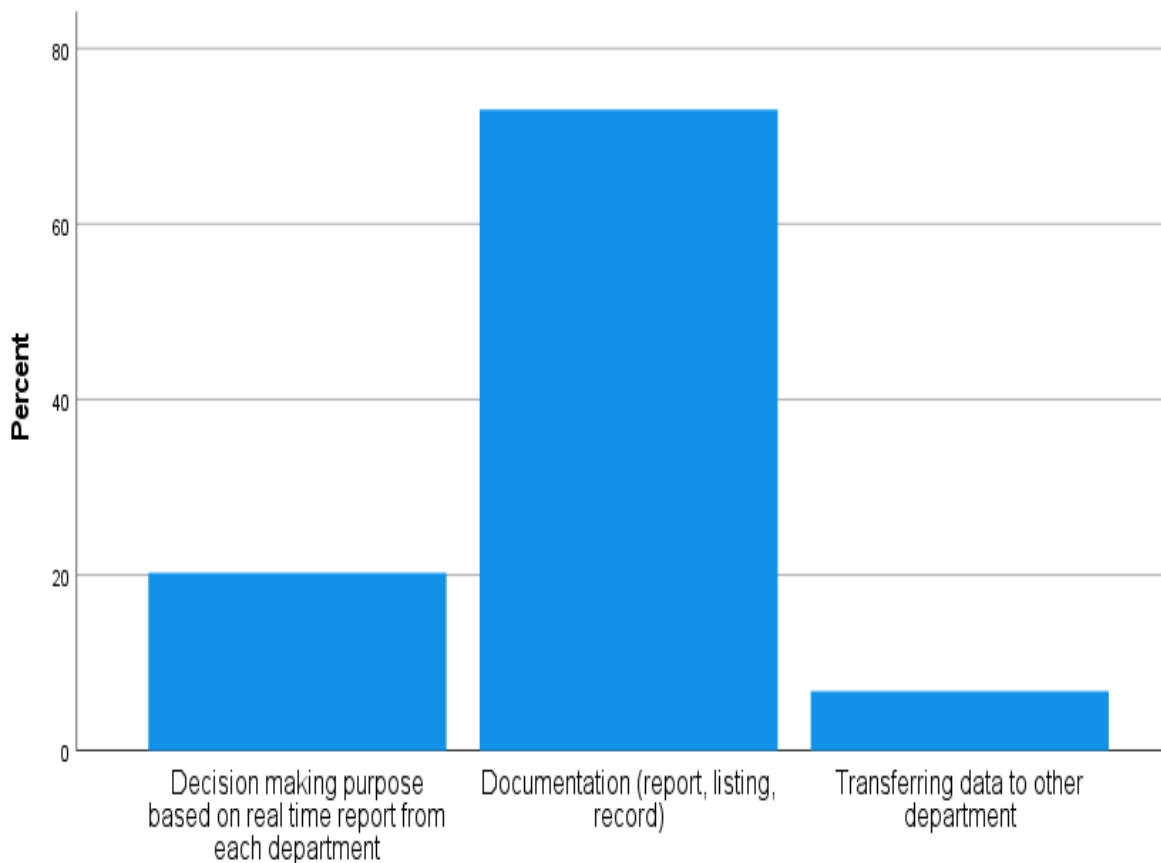

Figure 3: Technology Role in Organization

Assumptions of Multiple Linear Regression

The typical P-P plot for the model's residuals was developed to verify the normality assumption. As seen in Figure 4, the dot is closer to the diagonal line, which indicates that the residuals have a distribution closer to normal (Zulkifli et al., 2019; and Jamian et al., 2020). Therefore, the assumption of normality for the residuals for this study is typical since all points are slightly closer to the diagonal line.
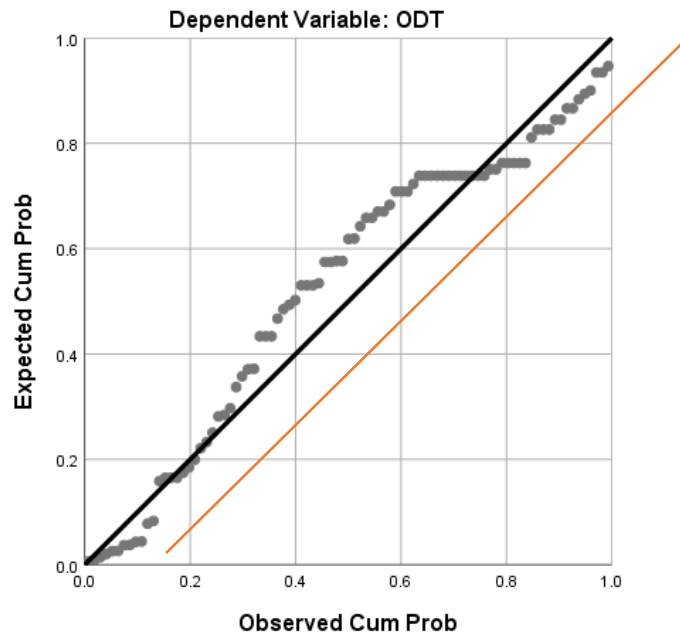

Figure 4: Normal P-P Plot of Regression Standardized Residual.

The Durbin-Watson statistic was considered for testing the assumption that residuals are independent or uncorrelated (Zulkifli et al., 2019; Jamian et al., 2020). This study found that the Durbin-Watson statistic was 1.359, indicating independence for the assumption of the residuals as the value ranges from 1 to 3. Table 5 shows the collinearity statistics referenced to test for multicollinearity. Analysis of the collinearity results showed that this assumption is met, as the tolerance values were above 0.2 while the variance inflation factor (VIF) values were below 10. Therefore, there is no multicollinearity in the data.

Table 5: Collinearity Statistics

Variables	**Collinearity Statistics**	
	Tolerance	VIF
Organizational Barrier	.904	1.106
Organizational Inefficiency	.351	2.853
Organizational Support	.351	2.847

Regarding the results of the existence of outliers, Table 6 shows that this assumption is tested using Cook's distance values. The results showed that Cook's distance values were all less than

1, meaning that individual cases did not unduly affect the model. This proved that there were no significant outliers that could influence the model.

Table 6: Residuals Statistics

Cook's Distance	Statistics
Min	.000
Max	.351
Mean	.017
Std Deviation	.042
N	89

Multiple Regression Analysis

The F-statistic obtained was 2.420, where the p-value is 0.089, indicating that the estimated regression is a definite trend toward significance at the 0.05 significance level. Based on Table 7, the regression results showed that organizational barriers and inefficiencies are insignificant at the 0.05 level, where organizational support only slightly insignificantly affects the digital transformation outcome. Therefore, we cannot reject the null hypothesis and conclude that organizational barriers and inefficiency have positive instead of negative influences on the digital transformation outcome and that organizational support has an inevitable trend toward a positive impact on the digital transformation outcome.

Table 7: Regression Analysis

Model	B	Standard Error	t	p-value
Constant (β_0)	3.185	.537	5.928	.000***
Organizational Barrier (X_1)	.066	.098	.674	.502
Organizational Inefficiency(X_2)	-.094	.147	-.635	.527
Organizational Support (X_3)	.302	.165	1.833	.070

Note: ***p-value $\leq$ 0.05, Multiple R = 0.271, Multiple R square = 0.073

Success Factor in Digitalized Transformation

The following sections describe the critical factors that led to the success of this digitized transition in organizations. The analysis is based on the frequency and percentage of respondents who indicate that they "Strongly Agree" with each item.

Table 8: Success Factor in Digitalized Transformation

No.	Factors	Frequency	Percentage
1	Talented staff with the right skills	78	87.6%
2	Strong leadership	73	82.0%
3	Experience and track record	72	80.9%
4	Aligned digital with existing IT	69	77.5%
5	Created culture for the transformation	61	71.9%

This table was developed based on the response from 89 respondents.

According to Table 8, 78 respondents (87.6 percent of the total) believe that competent employees with the required skills are an essential part of the digital transformation in the organization. From this, we can conclude that highly qualified people are the most crucial success factor in digital transformation. In addition, some additional criteria can be classified as success factors, such as strong leadership (82 percent), expertise, and track record (80.90 percent).

Conclusion and Implications
This study focused on the potential factors that can influence digital transformation by considering factors like organizational barriers, inefficiencies, and organizational support. To achieve the objective stated in this study, multiple linear regression was performed, which revealed that among the three independent variables, organizational barriers and organizational inefficiency have more positive than negative influences on the digital transformation outcome, and organizational support is close to being statistically significant on digital transformation. The finding of this study helps organizations to understand that digital transformation is an essential rule in Quality 4.0, and some factors such as lack of in-house skills, fear of change, cultural resistance, lack of strategy, and limited budget may give positive rather than negative impact to implement the digital transformation.

With all the analyses done, it is difficult to make big organizational changes, especially when other people with diverse perspectives are involved. However, this does not indicate that changing the working style or the atmosphere in the organization is impossible if everyone is ready to engage and adapt to the new digitalized environment in their workplace and carry out the transition correctly and accurately.

Therefore, because the expertise employee has a high correlation with the outcome of the digitalized transformation, it is suggested that the employee consider implementing the digitalized change with the Quality 4.0 principle comprehend together with the purpose of not only ensuring the efficiency of the technology used within the organization operation but also being efficient for external users such as building or maintaining the relationship with customers and supplier.

Several types of technology might be used in the organization, each with different usage and advantage; moreover, with detailed information on the implementation, the digitalized transition could succeed. For that reason, during the era of Quality 4.0, understanding the approaches such as Kaizen and Lean Six Sigma in the organization might boost and improve the efficiency of the working process or operation. This is because the Quality 4.0 technique may assist technology in the organization by lowering the lead time in transferring information or eliminating and improving the organization's working operation. This is consistent with the findings of Svetlana et al. (2018), who state that implementing quality management in the digital transformation, is adequate to minimize regular procedures that consume a great deal of

time and resources; to mitigate the impact of the "human factor" mainly on the quality of products and services; and, to guarantee high quality of the product while reducing expenses.

The limitation of this study is the small sample size. However, Quality 4.0 is a new concept, and relatively few companies have implemented it. Therefore, a sample size of 89 provides a good overview of the impact of organizational barriers, inefficiencies, and digital transformation support. In addition, the empirical finding of this study is beneficial from a practical perspective. Particularly organizations that are considering becoming involved in the digitalized business.

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