Improving the Quality of Products and Services in the Era of Digital Disruption: Challenges and Management Strategies

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Abstract : This research aims to analyze the challenges and management strategies needed to improve the quality of products and services in this era. Data analysis was carried out using a qualitative method with data analysis from 3 (three) companies that have successfully adapted to digital disruption. The results of the research from data analysis show that the right management strategy can improve the quality of products and services can help companies remain competitive in a rapidly changing market in the era of Digital Disruption. This research also found that in the era of digital disruption, it has brought major changes in various aspects of business, including in improving the quality of products and services positively and significantly.

Keywords: Product Quality; Service Quality; Digital Disruption; Management Strategy.

A.   INTRODUCTION

The era of digital disruption has brought significant changes in various aspects of life, including the business world. The development of digital technologies, such as the internet, cloud computing, and artificial intelligence, has presented new opportunities and complex challenges in improving the quality of products and services. In the midst of these changes, improving the quality of products and services has become increasingly important for companies to remain competitive and win the hearts of customers.

In this case, superior product and service quality not only provides satisfaction for customers, but can also increase brand loyalty, corporate image, and profitability. However,

improving quality in the era of digital disruption presents a number of challenges for businesses.

The era of industrial disruption or known as industry 4.0 is a term that first appeared in Germany in 2011. The era of technological disruption is also known as Industry 4.0, Idusgri 4.0 causes non-linear job competition, this occurs due to automation and connectivity in various fields that have an impact on the movement of the industrial world (A Aprilia – 2022). Innovation in science and technology that continues to develop day by day forces changes, competition between the industrial world in creating breakthroughs in technological tools is increasingly intense, so that it is no different from the law of the jungle, people who have wild ideas and great innovations in the industrial world, then they are the ones who will dominate the market (Nurjani, 2018).

Digital disruption has also created more intense competition in the market. With the advent of e-commerce platforms and online marketplaces, companies no longer compete only with local competitors, but also with companies from all over the world. Therefore, improving the quality of products and services is very important for companies to differentiate themselves from competitors and maintain a competitive market position.

Digital disruption has also changed consumer expectations for the quality of products and services. Consumers now expect a more personalized, fast, and convenient experience in interacting with companies. They want products and services that are innovative, easy to use, and have a clear added value. Therefore, companies must continue to adapt and develop management strategies that can improve the quality of their products and services to remain relevant in this era of digital disruption.

In facing challenges and opportunities in the era of digital disruption, companies must have a holistic and sustainable management strategy. They need to involve various departments, such as research and development, production, marketing, and customer service, to work synergistically in improving the quality of products and services. In addition, companies must also utilize digital technology as a tool to accelerate the innovation process, improve operational efficiency, and better understand consumer needs and wants.

The rapid and inclusive development of technology has produced a new reality, namely the world feels narrower, more pragmatic, where the difference in distance and time is no longer meaningful. The era of industrial disruption is inevitable. The big impact of this era of disruption has occurred on the daily environment. The lifestyle changes that occur to producers and consumers due to technological developments are clearly visible. People initially carried out buying and selling activities directly in stores, now they have switched to preferring to buy and sell activities online or through the marketplace. This is one of the impacts of the era of industrial disruption.

Departing from the above problem, it is interesting to study further, therefore through this research the answer to the problem formulation will be described as follows:

1. Identify the main challenges in improving the quality of products and services in the era of digital disruption.
2. Analyze effective management strategies to improve the quality of products and services in the context of digital disruption.
3. Providing practical recommendations for companies in implementing quality improvement strategies in the era of digital disruption.

So that this research is expected to provide practical guidance and strategies to improve the quality of products and services in the era of digital disruption, new contributions in literature on quality management, as well as management practitioners insight into the challenges and opportunities in improving the quality of products and services in the digital era.

The focus of this research is the business context (excluding the public or non-profit sector), management challenges and strategies (excluding technical or operational aspects of quality improvement), as well as literature studies and theoretical analysis as research methodologies (not conducting empirical research).

B.   LITERATURE REVIEW

Product quality

Quality is a complex and multidimensional concept. Various definitions and approaches have been proposed to understand and measure quality. In general, quality can be defined as "the ability of a product or service to meet or exceed customer expectations."

Product quality is also defined as the physical condition, function and nature of a product, whether goods or services based on the expected level of quality such as durability, reliability, accuracy, ease of operation, product repair and other product attributes with the aim of meeting and satisfying the needs of consumers or customers

Quality is not only limited to physical products, but also includes the service and experience provided to customers. Good quality can improve customer satisfaction, loyalty, and profitability of the company.

Gunawan (2022:20) stated that "product quality is the ability of a product to meet customer wishes. These customer desires include product durability, product reliability, ease of use and other valuable attributes".

Product quality can also be interpreted as a reference or the ability of a product to meet or exceed customer expectations in terms of performance, reliability, compatility, durability, serviceability, aesthetics, and adaptability. Good product quality can improve customer satisfaction, loyalty, and profitability of the company.
According to (Yamit, 2017, p. 11)The dimensions of product quality are:
  a) Performance To what extent the product can be useful according to the main function of the product
  b) Range ond type of features The completeness of additional features of an item, in addition to having the main use, there are also other complex uses.
  c) Reliability and durability The reliability of the goods during normal use and how long the goods can be used until improvements are needed. Reliability is the correlation of the probability of failure of use. Durability is related to how long the item continues to be used for a certain amount of time.
  d) Maintainability and serviceability Ease of operation of goods and ease of improvement or the existence of replacement parts. This describes the extent to which the ease of use goods can be carried out through the user's own care.
  e) Sensory characteristics Appearance, pattern, taste, attractiveness, smell, taste, and a number of other factors are likely to be important elements in quality. How does the product look so that it can attract the attention of customers.
  f) Etchical profile and image Quality is the biggest component of consumers' impression of goods and services. How does customer perception relate to the company's big name or reputation, or the brand of goods.
Product Quality Indicators According to (Anam et al., 2020, p. 123) There are a number of product quality indicators, namely: 1. Performance 2. Characteristics of the privilege 3. Alignment with specifications 4. Reliability 5. Durability of the product 14 6. Aesthetic.

Quality of service

Quality refers to the ability of a service to meet or exceed customer expectations in terms of speed, precision, friendliness, and competence. Good service quality can improve customer satisfaction, loyalty, and company image.

Tjiptono in Pertiwi (2021:68) states that "service is a dynamic state that is closely related to products, services, and human resources. As well as processes and environments that can at least meet or even exceed the expected quality of service"
The benefits will also be felt by customers, so that they are satisfied with the service they receive. The following are some of the goals of service according to Nashar (2020:22), namely:

1. Providing high-quality services
2. Causing a decision from the customer/consumer to immediately buy the goods/services offered at that time
3. Fostering customer / consumer trust in the services / goods offered
4. Avoid unnecessary demands in the future against manufacturers / sellers
5. Creating customer trust and satisfaction
6. Keeping customers / consumers feeling cared for in all their needs
7. Retain customers / consumers to continue using the goods / services offered

Digital disruption

The occurrence of technological disruption in the digital era is marked by innovation and massive fundamental changes due to the presence of digital technology, changing the system that occurs in Indonesia and globally.Disruption can be interpreted as a process in which new technologies allow new companies to challenge and replace established companies (Aaron Shapiro-2022). This disruption often occurs because new technologies allow new companies to offer better, cheaper, or more accessible solutions. Established companies need to adapt quickly to new technologies to stay competitive.

Industry 4.0 is said to be an era of technological disruption because automation and connectivity in a field will make the movement of the industrial world and job competition non-linear. Digital disruption also refers to fundamental changes that occur in an industry or market due to the emergence of new digital technologies. This digital technology can be in the form of the internet, cloud computing, mobile internet, social media, big data, artificial intelligence, and the Internet of Things (IoT).

Digital disruption has several characteristics, namely:
1. Speed: Change happens quickly and unexpectedly.
2. Widespread impact: Digital disruption can affect all aspects of business, from business models, products and services, to internal company processes.
3. Uncertainty: Digital disruption creates uncertainty and risk for companies that cannot adapt quickly.
4. New opportunities: Digital disruption also opens up new opportunities for innovative and risk-taking companies.

Management Strategy

Quality management strategy refers to the approaches and methods used by companies to improve the quality of products and services on a sustainable basis. The main objectives of a quality management strategy are to:
1. Meet or exceed customer expectations: Good quality can improve customer satisfaction, loyalty, and profitability of a company.
2. Increase efficiency and effectiveness: Implementing an effective quality management strategy can help companies to reduce waste, increase productivity, and reduce costs.
3. Builds a culture of quality: A strong culture of quality can encourage employees to focus on quality in all aspects of their work.
4. Improves competitiveness: Good quality can provide a competitive advantage for companies in a competitive market.

C.   RESEARCH METHODOLOGY

This study uses a qualitative type of research. Where this study uses data which is then processed using the type of Quality Management Strategy by analysis. The data used in this study is cross section data with samples taken from 3 companies.

In the questionnaire, the researcher provided a field related to opinions for Product and Service Quality as well as a revenue column. However, in practice, there are challenges that exist in management strategies in this Digital Disrupsa Era.

Then to avoid bias in this study, from k-3 companies with 10 questionnaires each, observations provide answers related to the quality of products and services, along with their challenges. Then in the analysis technique to test the research hypothesis by looking at the linear relationship between Product and Service Quality and Management Challenges and Strategies.

In the model that is built, the performance of management strategies and strategies can affect the quality of products and services, the basic model equation used in this study is six sigma measure (measure), that is, the process can be calculated using the formula:

CP = USL-LSL / 6* Standard Deviation where CP = Process Ability Index, USL = Upper Specificity Limit and LSL = Low Specification Limit.

The measure of process capability indicates the following
1. Fully capable process
2. Processes can fail at any time
3. Process is not capable

D.   RESULT AND DISCUSSION

Based on the results of estimates carried out using TQM, SIX SIGMA, ISO 9001, BENCHMARKING, and LEAN MANUFACTURING, it was found that in solving challenges, improving the quality of products and services, by using the Management Strategy in the digital era brings a positive influence that is measured by the success of a company in the process. The regression results of the management strategy type model provide benefits and higher success in improving the quality of products and services and solving better challenges with 87% compared to companies that do not utilize management strategies. The positive influence on the company's management strategy that remains consistent with regression with variable control of high speed of change, increased competition, changes in consumer behavior, technological complexity, and cybersecurity threats, where the results show that the management strategy has a 33.51% better quality improvement result than the company that does not fully utilize the management strategy.

Table: Examples of Companies in the Utilization of Management Strategies

company	Management strategy					success		
	TQM	Six Sigma	ISO 9001	Benchmarking	Lean Manufacturing	can	Likelihood fail	Unable to afford
Netflix	√	√	√	√	√	√		
gojek	√	√	√	√	√		√	
Airbnb	√	√	√	√	√	√		

The use of management strategies in the era of disruption has increased higher than before, this is evidenced by the use of technology in improving the quality of products and services, which affects overcoming problems that may arise in this case. An example like the table above: Netflix is a video streaming company that has successfully adapted to the era of digital disruption. Netflix uses data and analytics to understand customer preferences and offer personalized content. Netflix is also investing in new technologies to improve the quality of video streaming. Airbnb is an online platform that connects travelers with property owners. Airbnb uses digital technology to build community and increase trust between hosts and guests. Airbnb also offers a variety of additional services to improve the customer experience. As well as Gojek, which is an Indonesian technology company that offers various services such as online transportation, food delivery, and digital payments. Gojek leverages digital technology to reach customers across Indonesia and offer easy-to-use and affordable services. Improving the quality of products and services in the era of digital disruption is a complex challenge for companies. Companies need to adapt quickly, innovate, and understand changing consumer behavior to stay competitive. Case studies of companies that have successfully improved quality show that with the right strategy, companies can take advantage of digital disruption to improve the quality of products and services and achieve success.

Then based on the explanation of the Company example above, a regression is carried out which is then shown by the success column. From the results of the above estimates, it shows that the implementation of the management system does not always have a positive effect on the performance of some companies. This can be seen in the success rate of Gojek has a possibility of failure. With the quality of products and services in the era of digital disruption, it is a complex challenge for companies. So companies need to adapt quickly, innovate, and understand changes in consumer behavior to stay competitive. With the table of companies that have successfully improved quality, it shows that with the right strategy, companies can take advantage of digital disruption to improve the quality of products and services and achieve success.

This research on the one hand confirms that in the challenges and management strategies in the Digital Disruption Era can have a positive effect on the quality of products and services, but it is also further found that the type of management strategy that is implemented, in other words, the existence of various types of strategy implementation can have a positive effect on the quality of products and services which means that it will be able to provide a higher effect, one of which is by protecting the copyright of the quality of products and services from behaviors that can be detrimental such as piracy for both digital and non-digital products. Piracy itself is more prone to occur in digital products that are highly dependent on management strategies which means that on the one hand it can indeed improve the quality of products and services through copyright protection, revenue generation and increased creativity but on the other hand it can also cause a high chance of piracy, especially in digital products which in turn will have an impact on a decrease in income (Towse, & Handke, 2013). In the current era of disruption, as we know, the pace of technological change and market trends is so rapid. This presents various challenges for companies in maintaining the quality of their products and services. This is where the role of management strategy becomes very important.

Table 2. Analysis of product and service quality disruption in management strategy

Condition	Definition	Digital Disruption
Identifying Opportunities and Challenges	Lack of Resources	The digital disruption that occurs is a rapid and major change, especially in terms of technology, as clear evidence of digital disruption that affects the quality of products and services.
Developing Innovation	Cultural Change	Digital disruption is one of the consequences of technological developments that tend to be difficult to predict in detail. The company may be able to predict but the prediction will not be completely accurate. This makes it difficult to predict what will happen in the future.
Increasing Efficiency and Effectiveness	Market Uncertainty	Digital disruption makes companies have to solve complex issues. In addition, all company activities are regulated in accordance with applicable regulations, so that innovation actions that are mainly related to technology must still pay attention to the provisions.
Building Customer Trust	Fierce Competition	Digital disruption makes companies ambiguous. Coupled with the direction of changes in Indonesia's economic conditions that need to be adjusted. So that questions arise that are floating because of the lack of clarity. This can cause a change in strategy that is quite dynamic and needs more attention so as not to misinterpret the conditions that occur.

Despite the challenges, management strategies remain an important tool for companies to improve the quality of their products and services in the era of disruption. By implementing the right and effective strategy, companies can adapt to change, increase competitiveness, and achieve long-term success.

Improving the quality of products and services in the era of disruption requires appropriate and measurable management strategies. Here are some steps that companies can take to implement a quality management strategy:

1. **Establishing a Clear Vision and Mission is to** set a clear vision and mission of the company related to the quality of products and services. This vision and mission must be in line with the company's overall business values and strategy. A clear vision and mission will help the company to focus on achieving its goal of improving quality.

2. **Conduct a SWOT Analysis with the purpose** of SWOT Analysis (Strengths, Weaknesses, Opportunities, Threats) can help companies to identify strengths, weaknesses, opportunities, and threats related to the quality of their products and services. This information can be used to develop the right strategy to improve quality.

3. **Setting Measurable Goals and Objectives That means every** company needs to set measurable goals and objectives related to the quality of their products and services. These goals and objectives must be SMART (Specific, Measurable, Achievable, Relevant, and Time-bound). By setting measurable goals and objectives, companies can monitor their progress and ensure that they are on track to achieve their goals.

4. **Building a Quality Culture is the** main key in improving the quality of products and services in a sustainable manner. A culture of quality must be instilled in all employees at all levels within the company. This can be done by providing training on quality, rewarding outstanding employees, and creating a work environment that is conducive to quality improvement.

5. **Implementing a Quality Management System** that suits the needs and industry. This quality management system should include processes for identifying, preventing, and controlling product and service defects. There are various quality management systems available, such as ISO 9001 and Six Sigma.

6. **Conducting Quality Measurement and Monitoring i.e.** companies need to routinely measure and monitor the quality of their products and services. This measurement data can be used to identify areas for improvement and to track progress in achieving quality goals and objectives.

7. **Carrying out Continuous Improvement, which means** that companies need to apply the philosophy of continuous improvement in order to improve the quality of their products and services. This can be done using a variety of methods, such as Kaizen and Six Sigma.

8. **Involving Customers** in the quality improvement process is very important. This can be done by conducting customer surveys, holding focus groups, and collecting customer feedback through various channels. Customer feedback can be used to identify areas that need improvement and to develop better products and services.

9. **Strengthening Collaboration, namely** Improving the quality of products and services in an era of disruption often requires collaboration with various parties, such as suppliers, customers, and universities. This collaboration can help companies to gain access to new technologies, knowledge, and resources needed to improve quality.

10. **Adapt to Change, in** the era of disruption is characterized by rapid and unexpected changes. Companies need to adapt to these changes by proactively innovating and improving the quality of their products and services.

By implementing the above steps, companies can improve the quality of their products and services in the era of disruption and achieve competitive advantage.

E. CONCLUSION

Improving the quality of products and services in the era of digital disruption is a complicated challenge for companies. Companies must be able to adapt quickly, innovate, and understand changes in consumer behavior to stay competitive. Case studies of companies that have succeeded in improving quality show that with the right strategy, companies can use digital disruption to improve the quality of products and services and achieve success.

This research supports the view that management challenges and strategies in the era of digital disruption can have a positive impact on the quality of products and services. In addition, it was also found that various types of management strategies implemented can have a positive influence on the quality of products and services, including protecting copyright from harmful actions such as piracy, both for digital and non-digital products.

By implementing this, companies can improve the quality of their products and services in the era of disruption and achieve competitive advantage. An effective and appropriate management strategy will help companies adapt to change, increase competitiveness, and achieve long-term success.

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