

“EVALUATING THE IMPACT OF STRATEGIC MANAGEMENT PRACTICES IN ENHANCING CUSTOMER SATISFACTION: AN EMPIRICAL STUDY OF VALVE MANUFACTURING IN THE OIL AND GAS SECTOR”

Research Paper

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“Abstract”

Improving customer satisfaction is currently a key concern as it helps to boost customer value, anticipate and manage consumer demands, and show that a company has the ability and commitment to satisfy customer needs. In order to accomplish the research objectives, the present investigation has adopted a quantitative approach. Industrial clients of the oil and gas businesses were surveyed quantitatively utilising a survey-based questionnaire tool to collect the data. For the current investigation, the positivism research paradigm and a descriptive research design prove to be viable.

The primary aim of the current study is to examine the strategic management methods used by businesses in the oil and gas sector, especially the valve manufacturing industry, for long-term sustainability, as well as the influence of these approaches on total customer satisfaction.

There is a significant impact of the sustainable manufacturing process, product quality and delivery and services on customer satisfaction. The production of valves can be increased by using a waste-reduction strategy and a sustainable manufacturing technique. Utilising sustainable product concepts could also assist in addressing the issues with rework and the expense of raw materials. Building consumer and market trust in valve manufacturing companies may be accomplished through the use of strategic management and controlled product delivery. Companies in the oil and gas industry that manufacture valves can increase customer satisfaction by sustaining high product quality.

No study as per the researcher's knowledge has been conducted previously that aims to ascertain the strategic management methods used by businesses in the oil and gas sector, especially the valve manufacturing industry, for long-term sustainability, as well as the influence of these approaches on overall customer satisfaction which serves as the originality of the research.

Keywords: Strategic Management, Valve Manufacturing, Oil and Gas Sector, Sustainable Manufacturing, Product Quality, Delivery, Customer Satisfaction.

1 Introduction

Throughout the past twelve years, there have been a number of major disruptive incidents that have affected the valve businesses, such as the Deepwater Horizon oil spill, the 2014 oil recession, or issues related to climate change, the COVID outbreak, transportation difficulties, and lately, the conflict in Ukraine. These incidents have made the consumer base of valve producers volatile, necessitating the development of fresh, innovative approaches to meeting their requirements, worries, and business needs (Hughes, 2022, para. 1-14).

The production of industrial valves is an exceptionally competitive and dynamic sector, with new innovations and technology appearing frequently. Having a strong dedication to excellence, creativity, and customer satisfaction is crucial for achievement in this sector (Sohail, 2023, para. 1-7). Customers are seeking superior goods and services in the current market environment of intense competition. A

company's key objective today is to maintain customer satisfaction since satisfied clientele results in better earnings, which helps it stay relevant (Mittal and Gupta, 2021, p. 878).

Increasing client contentment is currently a top priority since it serves to increase the value of customers, predict and handle consumer demands, and demonstrate the capacity and accountability to meet customer requirements. Customers are the most significant asset of an organisation, and it is now their duty to constantly keep them contented and satisfied (Adara, 2020). In this context, strategic management practices may play a crucial role in enhancing customer satisfaction in the Valve Manufacturing Industry belonging to the Oil And Gas Sector. Strategic management practices can be referred to as top-level management actions that involve making decisions regarding the purpose, goals, views, tactics, and well-thought-out regulations of the organisation. In accordance with the organisational advantages and disadvantages, it also includes the creation of prospective strategies for the effective management of ecological risks and possibilities (Palladan and Adamu, 2018, p. 1033). Therefore, the current study aims to examine the strategic management methods used by businesses in the oil and gas sector, especially the valve manufacturing industry, for long-term sustainability, as well as the influence of these approaches on total customer satisfaction.

2 Aim and Objective of the study

The primary aim of the current study is to examine the strategic management methods used by businesses in the oil and gas sector, especially the valve manufacturing industry, for long-term sustainability, as well as the influence of these approaches on total customer satisfaction. In order to accomplish the above aim, the study will focus on addressing the following objectives:

1. To determine the main strategic management practices that are followed within the oil and gas sector.
2. To examine the adoption of these strategic management practices in the valve manufacturing industry within the oil and gas sector.
3. To assess the significance of estimating the extent of customer satisfaction in the valve manufacturing industry.
4. To evaluate the impact of adopted strategic management practices in the valve manufacturing industry on the customer satisfaction level.

3 Literature Review

3.1 Oil and Gas Sector – Valve Manufacturing

Because of the built-in health, security, and ecological concerns involved with the processes of drilling, prospecting, extraction, processing, and shipment, the oil and gas sector is one that is heavily controlled. Oil and gas businesses have been forced to be creative and disruptive in order to boost efficiency and effectiveness, minimise health and safety exposure, minimise capital and operational expenses, boost earnings, and strengthen compliance with regulation (Shou et al., 2021, p. 585-602). These laws and regulations, along with a resulting shortage of talent owing to the retirement of skilled workers as well as low oil prices for an extended amount of time, have also contributed to this (Wanasinghe et al., 2020, p. 104175-104197).

Furthermore, while performing operations on a well, the oil and gas sector uses various pieces of machinery. The surface safety valve constitutes one of the most important parts of these networks. The purpose of this single-acting, mechanically or pneumatically operated swab-gate valve is to separate the wellhead from subsequent production machinery (Albor Mejia et al., 2019, p. 45-70). The “Xmas trees,” which are located on the surface of the wellhead and are utilised to direct the supply of oil or gas to the various production equipment, contain surface safety valves. Surface safety valves work by keeping vigilant tabs on the pressure values in the primary pipeline and automatically turning off the

valve's operation when the measurements of pressure go beyond the permitted range (EXPRO International Group, 2019; Albor Mejia et al., 2019).

The improvement of closure unit dependability to meet operational requirements by reducing service failures has become one of the most crucial areas of the oil and gas sector (Aslanov, Abasova and huseynli, 2020, p. 60-68; Titenko et al., 2020, p. 3097-3101). Liner movement valves frequently serve as opening-closing devices that engage in the oil and gas business, and this in effect has an impact on the financial system. In the industrial setting, the proportion of valve structures using various types of seals has risen dramatically. The calculated percentage is even greater in the oil and gas sector. An operating halt brought on by the sealing devices may pose severe problems. Consequently, this will result in casualties, property damage, and diminished assets (Aslanov and Mammadov, 2017, p. 53-58). The production of valves is essential to the secure and efficient functioning of crucial procedures in the oil and gas industry. To enable quick reaction to unanticipated events, valves are essential for catastrophic shutdown mechanisms. The significance of exceptional valve manufacture must be emphasised as the oil and gas sector proceeds to grow on a worldwide scale since it directly affects operational effectiveness, security, and environmental responsibility (Mammadov and Aslanov, 2022, p. 98-103).

3.2 Strategic Management in Valve Manufacturing

Hunger (2020) asserted that a firm's long-term performance is determined by an array of managerial decisions and behaviours known as strategic management. It entails investigating the environment (both inner and exterior), strategic thinking, strategy development, execution, assessment, and supervision. For the purpose of establishing and implementing an entirely novel strategy for an organisation, the investigation of strategic administration emphasises the tracking and evaluation of outside possibilities and challenges in the context of a firm's advantages and shortcomings (Hunger, 2020). In the industrial sector, strategic management needs strategists to concentrate on a variety of divisions and business processes. All management strategies must take employees, technological advances, risks, and sustainability issues into account. Managers in the areas of supply chain management, advertising, and marketing must be considered in the broader framework of the business's ultimate plan of action (Ray, 2021).

Activities involving oil and gas, including processing to transportation, rely heavily on pipeline networks. In the firm, technology and reliable management systems are consequently essential. Oil and gas valves are crucial in this situation to guarantee the commercial pipeline activities' security. Therefore, it must be asserted that strategic management plays a crucial role in redefining the operations of the oil and gas industry (Dombor, 2021).

Patil and Kant (2014, p. 126-135) examined the impediments to and facilitators of ecological inclusion in an oil and gas business's strategic performance management processes. The phases and methods for incorporating in the company have been identified using a qualitative investigation, which also shows how control mechanisms enable the incorporation of long-term sustainability into the overall plan. The results showed that while organisational, technological, and organizational-level facilitators advanced the incorporation of environmental sustainability inside the company, some cognitive obstacles significantly impeded the achievement of complete incorporation of strategic management. Shuen, Feiler and Teece (2014, p. 5-13) also contemplated that the emergence of enablers is sparked by structural forces, which had a number of repercussions for governments, universities, and other entities. The research demonstrated that the administration and oversight of sustainability outcomes for businesses may be improved by integrating sustainability into performance management processes (Shuen, Feiler and Teece, 2014, p. 5-13).

Plenkina et al. (2018, p. 858-874) analysed the characteristics of Strategic Management Initiatives in Oil Businesses in Russia. The significance of creativity and making well-informed choices regarding its execution has been demonstrated by the beneficial trends in the expenses of research and development (R&D), the rise in the number of requests for patents, and the results of an investigation

carried out among the highest levels of oil and gas enterprises. Additionally, it was found that modelling is today a crucial tool used by all oil and gas businesses to assist with managerial choices.

3.3 Customer Satisfaction in the Oil and Gas Sector

It is important to understand the variables that influence customer satisfaction levels or to be aware of the aspects that are mostly accountable for the development of this satisfaction in relation to a certain brand. The idea of customer satisfaction comes into play when a brand satisfies the demands and wants of a consumer (Leninkumar, 2017, p. 450-465).

Yusuf et al. (2014, p. 531-543) analysed the oil and gas sector's relationship with agile logistics parameters, competing goals, and company success. The study discovered that strong supplier relationships help companies be more reactive and customer-focused. Interestingly, consumer enrichment was extremely associated with “goods customisation” and “offering standard commodities”. This is because the factors of product uniformity and personalisation are at odds with agility's consumer enhancement aspect. Therefore, businesses could compete using the mass manufacturing framework, in which case they would offer standard offerings with price as the primary competitive consideration, or businesses might choose client enrichment via the offering of mass customization of goods or services that correspond with consumer requirements with the goal of increasing satisfaction with clients.

Similarly, Kirat (2015, p. 438-446) asserted that Qatar's Oil and Gas Industry has given the issue of corporate social responsibility a lot of thought recently in order to address a number of difficulties, including globalisation, the business sector's effect, interactions, financing, and ethics, among others. Customer satisfaction, compliance with anti-bribery and anti-corruption laws, responsibility, openness, evaluations of performance, and relationships with suppliers for both domestic and foreign supply networks are other issues that CSR deals with in Qatar.

According to Sharmin (2012), the economic climate currently is becoming more competitive, and businesses are realising their ability to compete solely on pricing may fail rather they must concentrate on their most important customers. A business has to surpass its customer's requirements in order to provide great services or goods. Among the most important components of providing quality goods or services is consistently upholding the commitment and avoiding making promises that are unable to be met. According to Goshime et al. (2019, p. 691-714), most businesses in developing nations adopt improved productivity approaches to boost process-oriented customer delivery. Owing to a shortage of opportunities for imaginative thinking, manufacturing sectors struggle to meet consumer desires for a variety of products.

Similarly, Mojarad, Atashbari and Tantau (2018, p. 626-638) affirm that customer satisfaction is essential to long-term performance in the oil and gas sector. It depends on elements like security, dependability, cost, interaction, and reactance. Businesses might not only exceed client requirements by adopting tactics that prioritise these factors, but they can also acquire an advantage in a fast-paced and challenging sector. Additionally, by enhancing the sector's overall image and sense of ethical conduct, these initiatives ensure that they remain relevant in an ever-shifting environment (Bansal and Song, 2017, p. 105-149).

3.4 Research Gap

From the review of the literature, it can be observed that several scholars have exhibited immense interest in the domain of the manufacturing industry and customer satisfaction. Nevertheless, no study as per the researcher's knowledge has been conducted previously that aims to ascertain the strategic management methods used by businesses in the oil and gas sector, especially the valve manufacturing industry, for long-term sustainability, as well as the influence of these approaches on overall customer satisfaction. This research study therefore aims to address the proposed research gap and identify the potential of the strategic management techniques used for the long-term viability and satisfaction of the customers.

4 Methods and Materials

The main goal of this study is to investigate the strategic management techniques employed by companies in the oil and gas industry, particularly in the valve manufacturing sector, for long-term sustainability as well as the impact of these techniques on overall customer satisfaction. The current study has used a quantitative method in order to achieve the research goals. The information is gathered from the oil and gas industrial clients using a quantitative survey-based questionnaire instrument. A positivist paradigm of research and a descriptive research design is appropriate for the present investigation because it has employed a quantitative research methodology. The truth, as defined by positivism, emerges without consideration for individuals. It is governed by immutable laws and is not affected by impressions (Tubey, Rotich and bengat, 2015). The main objective of descriptive research, on the other hand, is to provide an accurate and trustworthy portrayal of the components or factors that relate to or are significant to the inquiry. The framework of this type of study design is more stringent (Rahi, 2017, p. 1-5). Additionally, choosing the right sample size is critical for gaining valuable insights for any kind of investigation. A smaller sample size increases the risk of manipulation, which could compromise the validity of the study. While, a larger sample size necessitates significant time and resources (Boddy, 2016, p. 426-432). A convenience sampling technique was used to choose the sample for gathering primary data, and information from a sample size of about 200 industrial clients was acquired in accordance with their availability. In this sampling technique, samples are selected according to the convenience of the investigator. Due to their ease of conscription, these individuals are selected as the sample. However, it might not be accurate because they have been chosen for convenience rather than because they had the qualities the study needed (Sharma, 2017, p. 749-752).

4.1 Data Analysis Tools

Questionnaire-based surveys were used to collect the primary data for the present research from the targeted respondents. The questionnaire for this survey included fundamental demographic information in addition to inquiries on respondents' opinions on the sustainable manufacturing process, product quality, delivery, and services, and customer satisfaction. Since the study involves a questionnaire approach for the collection of quantitative data, several statistical tests, descriptive statistics and SPSS have been implemented.

5 Results and Discussion

5.1 Demographics of the Respondents

The descriptive statistics reveal that approximately 52.4 per cent of the respondents are females while 47.6 per cent of the respondents are males (refer to Figure 1).

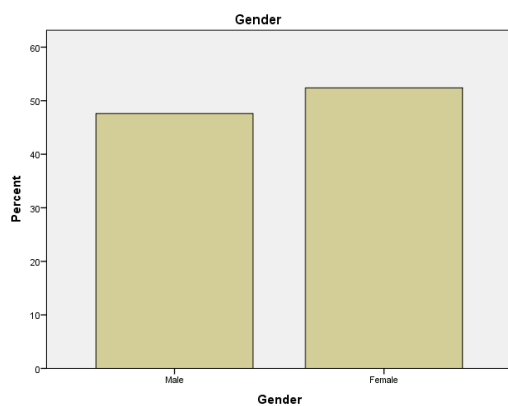


Figure 1. Gender Graph.

The majority of the respondents, 26.8% were aged between 31 – 40 years, followed by 26.8 per cent aged above 51 years, and 25.9 per cent between 41 – 50 years (refer to Figure 2).

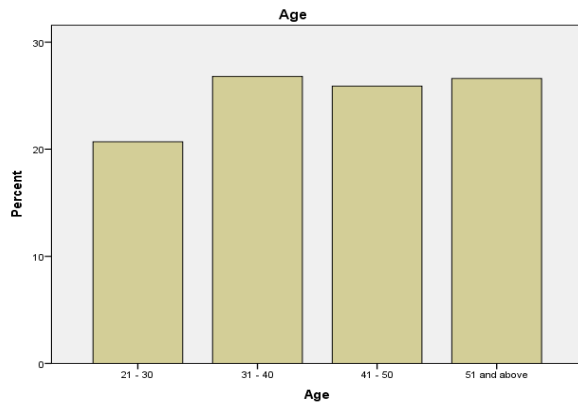


Figure 2. Age Graph.

Concerning educational qualification, about 38.5% of the respondents were post-graduates, 29.8 per cent held a doctorate degree and 23.8 per cent were graduates (refer to Figure 3).

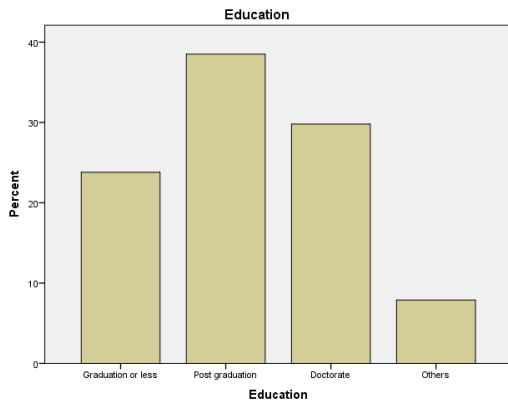


Figure 3. Education Graph.

Regarding the experience of the respondents, it was found that 23.8 per cent of the respondents had an experience of 16-20 years, followed by 22.2 per cent of the respondents having an experience of 11-15 years and 21.2 per cent of the respondents having an experience of 5-10 years (refer to Figure 4).



Figure 4. Work Experience Graph.

5.2 Descriptive statistics

The assertion “Adopting a sustainable manufacturing process leads to waste reduction and assists in better product output in valve manufacturing” had a high mean score of 4.17 with a standard deviation of 0.91 and the assertion “Adopting a sustainable manufacturing process influences the product design and maximise resource efficiency” had a low mean magnitude of 3.8, according to the descriptive statistics results for the “Sustainable manufacturing process” parameter. This shows that participants were in agreement that improved product output in valve manufacturing can be achieved by using a sustainable manufacturing approach and reducing waste. Nevertheless, the research participants do not provide much emphasis on the aspect of product design and maximising resource efficiency through a sustainable manufacturing method.

In the context of product quality, outcomes show that the assertion “Developing sustainable product strategies leads to less rework and reduced raw material costs, which increases manufacturing efficiency” had a significant mean value of 4.18 and a standard deviation of 0.86 and the assertion “Sustainable valve strategies help in a better brand establishment of the valve products in the oil and gas sector” had a low mean significance of 3.8 and a standard deviation of 0.86. This shows that participants were in agreement that the issues with rework and costs of raw materials might be resolved by using sustainable product approaches. Nevertheless, the better brand establishment of valve products in the oil and gas sector through sustainable valve strategies is not highlighted by the respondents.

Regarding delivery and services, it is found that the statement “Adopting efficient delivery schedules for higher accessibility to valve products assists in strategic management of better product distribution” had a low mean value of 3.77 and a standard deviation of 0.92, while the statement “Strategic management of better product distribution ensures higher trust for valve manufacturing organisations among customers and industry” had a high mean value of 4.2 and a standard deviation of 0.92. This demonstrates that participants concur that controlled product delivery with strategic management may be used to increase trust for valve manufacturing organisations among consumers and the wider marketplace. Nevertheless, better product distribution through efficient delivery schedules for higher access to valves is not assumed to be true by the respondents.

Additionally, for the aspect of customer satisfaction, it was revealed that the results show that the claim "Higher satisfaction among customers in the oil and gas sector is influenced by better product quality of valves produced" had a large mean value of 3.99 and a standard deviation of 0.76, and the remark "Higher satisfaction among customers in the oil and gas sector is influenced by strategic initiatives taken by valve manufacturers for better product designing" had a low mean value of 3.8 and a standard deviation of 0.92. It demonstrates that participants were in agreement that increased customer satisfaction for valve manufacturing companies in the oil and gas industry may be reached through preserving superior product quality. However, the respondents provide far less emphasis on the aspect of strategic decisions undertaken by valve makers helps to improve product design for greater satisfaction.

5.3 Hypothesis Testing

Before testing the hypothesis, the Cronbach Alpha test was implemented to test the reliability of the instruments. The table given below provides the Cronbach alpha values of the variables Sustainable manufacturing process, Product Quality, Delivery and Services and Customer Satisfaction. The Cronbach Alpha ranged from 0.910 to 0.688 indicating good internal consistency. Hence all the items were considered for further analysis.

Variable	Cronbach's Alpha	N of Items
Sustainable Manufacturing Process	.910	6
Product Quality	.884	6
Delivery and Services	.896	6

Customer Satisfaction	.688	6
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Table 1. Reliability Statistics

Hypothesis 1

H10: There is no significant impact of the sustainable manufacturing process on customer satisfaction.

H11: There is a significant impact of the sustainable manufacturing process on customer satisfaction.

In order to test the hypothesis 1, a regression analysis was applied by using SPSS.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.278	.076		30.027	.000
	Sustainable manufacturing process	.405	.019	.567	21.738	.000

a. Dependent Variable: Customer Satisfaction

Table 2. Hypothesis 1

The outcomes of the regression analysis showed that the β value was 0.567, and the p-value for the association between sustainable manufacturing methods and consumer satisfaction was $0.000 < 0.05$. It can be inferred that the sustainable production approach significantly affects customer satisfaction because the p-value was below 0.05. As a consequence, the null hypothesis has been rejected, and the alternate hypothesis has been accepted. Thus, it can be inferred that using a sustainable manufacturing process for the production of valves can raise customer satisfaction across valve buyers in the oil and gas sector. These study results are similar to that of (Agan, Acar and Borodin, 2013, p. 23-33) who revealed that anticipated advantages including cost reductions, greater consumer satisfaction, fresh market prospects, enhanced business reputation, and higher profitability are the most important drivers for sustainability.

Hypothesis 2

H20: There is no significant impact of product quality on customer satisfaction

H21: There is a significant impact of product quality on customer satisfaction

An SPSS regression analysis was used to assess hypothesis 2 of the study.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.820	.077		23.565	.000
	Product Quality	.522	.019	.654	27.294	.000

a. Dependent Variable: Customer Satisfaction

Table 3: Hypothesis 2

The findings of the regression analysis showed that the association between product quality and customer satisfaction had a p-value of $0.000 < 0.05$ and a β value of 0.654. Given that the p-value was as below 0.05, it can be asserted that there is a significant relationship between product quality and customer satisfaction. As a consequence, the null hypothesis has been rejected, and the alternate hypothesis has been accepted. It is reasonable to conclude that maintaining product quality for valve production can raise customer satisfaction amongst valve buyers in the oil and gas business. This study result is similar to the findings of the study conducted by (Cruz, 2015, p. 55-65) who suggested that Customer satisfaction and product quality are closely related variables that are essential to any company's achievement. The extent to which a product satisfies client demands and expectations is fundamentally determined by its quality. A product of excellent quality usually functions precisely, has fewer flaws, and appears more resilient, all of which improve the customer experience. Customer pleasure and quality of goods are mutually beneficial. Customer satisfaction is more probable to result from goods of excellent quality, and satisfied customers frequently offer insightful feedback that can further enhance the quality of the goods. For organisations looking to establish a solid reputation, win client loyalty, and experience sustained success, this cycle of continual development is essential.

Hypothesis 3

H30: There is no significant impact of delivery and services on customer satisfaction.

H31: There is a significant impact of delivery and services on customer satisfaction.

A regression analysis was carried out using SPSS to evaluate Hypothesis 3.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.004	.069		28.886	.000
	Delivery and Services	.489	.018	.661	27.799	.000

a. Dependent Variable: Customer Satisfaction

Table 4: Hypothesis 3

The findings of the regression analysis showed that the association between valve delivery and services and customer satisfaction had a p-value of $0.000 < 0.05$ and a β of 0.661. It can be inferred that the delivery and services have a significant impact on customer satisfaction because the p-value was below 0.05. As a consequence, although the null hypothesis may be rejected, the alternate hypothesis may be accepted. Thus, it can be inferred that the distribution of valves and the provision of related services may result in greater customer satisfaction amongst oil and gas industry buyers of valves. These study results are similar to those of Dündar and Öztürk (2020, p. 2675-2693) who revealed that in an extremely competitive corporate environment of today, the importance of delivery of products and services on customer satisfaction can't be ignored. Outstanding customer service and effective and dependable delivery methods are essential elements that have a direct impact on the way customers view a company and its goods and offerings.

6 Conclusion and Recommendations

Conclusively, the findings of the study demonstrated that a sustainable manufacturing approach and waste reduction can be used to improve product output in the manufacture of valves. Also, employing sustainable product ideas could help to address the problems with rework and the costs of raw materials. The study showed that strategic management and regulated product delivery may be utilised to build consumer and market trust in valve manufacturing businesses.

Also, the research emphasised that maintaining excellent product quality can lead to greater customer satisfaction for valve manufacturing businesses in the oil and gas industry. Additionally, the results of hypothesis testing demonstrated that there is a significant impact of the sustainable manufacturing process, product quality and delivery and services on customer satisfaction. Based on the study results, the following recommendations have been provided

1. There seems to be a significant trend toward the consumers themselves setting stringent requirements for sustainable manufacturing operations in the valves industry, even while rules imposed by regulatory organisations still set rigid guidelines. Therefore, in order to embrace the aspect of sustainable manufacturing processes, several approaches like waste management strategies or lean production must be imposed in order to rescue wastage and enhance the production of valves.
2. Secondly, as observed from the findings of the study, sustainable production impacts customer satisfaction to a great extent. It is therefore essential to develop sustainable product design, affirm the life cycle of the products produced and identify the environmental impact to embrace environment-friendly solutions.
3. Moreover, the valve manufacturers must also work on integrating strategic management and regulated product delivery. It is important to ensure that the business complies with the regulatory practices, industry standards and safety measures in order to gain the trust of the consumers. The valve manufacturing companies must emphasise the efficient delivery of the products and also meet the regulatory assessments.
4. Further, the study highlighted that product quality is a major concern for customers, especially in the valve manufacturing businesses. Therefore, the study recommends that valve manufacturers must develop strict quality control aspects to ensure the manufacturing of high-quality valve products. Also, it is imperative to invest in workforce training and quality assurance in order to minimise valve defects and failures.
5. Furthermore, manufacturing businesses must work on the integration of a culture of continuous improvement within the firm thus identifying the domains that require improvements in service delivery, product quality and manufacturing of the products. It is important to stay updated and abreast with the best industry practices.
6. Furthermore, robust customer relationship management is essential in order to assess customer interactions, address the teething issues, and gather extensive feedback. The executives must work forward to use the feedback provided to ensure the improvements of the products and services thus aligning them with the needs and expectations of the customers.
7. Also, the valve manufacturing firms must also conduct comprehensive market research and gather consumer insights. It is important to conduct regular market research in order to comprehend the ever-changing customer preferences, the competitor's offerings and the industry trends. By comprehending customer preferences, the firms can adapt the improvements to their product offerings and services.

7 Theoretical Implications / Managerial Implications

The current study examines the strategic management methods used by businesses in the oil and gas sector, especially the valve manufacturing industry, for long-term sustainability, as well as the influence of these approaches on total customer satisfaction. The study will help managers, executives, leaders, and policymakers within the valve manufacturing firms to understand the perceptions of industrial clients regarding their preferences for the products delivered. The study will also offer information on how the integration of sustainable manufacturing will not only have a beneficial impact on the environmental aspects but also impact the customer's preferences. The study also offers a chance for the industrial clients of the oil and gas industry to provide their opinions for improving the manufacturing of the products. Subsequently, the study will be of enormous value to academicians and

research scholars who plan to undertake research studies comparable to this one and can gain important insights from the current study.

8 Limitations of the Study and Any Future Research Direction

The fact that a questionnaire survey was employed to assess the attitudes and motives of the study participants is a significant drawback of the present investigation. Participants were only allowed to respond to their degree of agreement and disagreement with the predefined statements, which limited their ability to draw inferences regarding the topic in detail. Future research must be done to comprehend the viewpoints of respondents wherein an interview survey may be used to ascertain their in-depth opinion of the Sustainable manufacturing process, Product Quality, Delivery and Services and Customer Satisfaction. Another limitation of the current study is that the current study is specific to valve manufacturing in the Oil and Gas Industry, thus the findings obtained may not be generalisable to other industries. Future studies may be conducted to find the impact of sustainable manufacturing on customer satisfaction on other industries as well.

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