

Impact of Product Quality on Customer Satisfaction: Evidence from Selected Consumer Durables

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ABSTRACT

Ensuring quality product is top priority of all organisations as it plays a significant role in achieving customer satisfaction, which is the ultimate objective of all marketing efforts. This study delves into the aspect of product quality considering its eight dimensions to study the impact of product quality on customer satisfaction in consumer durable sector. A well-structured questionnaire was designed to seek the opinion of respondents about the quality of durable products and their level of satisfaction. The data obtained from 560 respondents confirmed that product quality has a positive and significant impact on customer satisfaction. The study also revealed that perceived quality and durability have the highest impact on customer satisfaction, followed by reliability, features, and aesthetics. The study recommends that companies should ensure that their products align with customer needs and preferences by focusing on critical product quality dimensions. The study has identified areas where businesses may need to improve to achieve higher levels of customer satisfaction to ensure long-term success.

Keywords: *Product Quality, Product Quality Dimensions, Customer Satisfaction*

Introduction

As competition among businesses intensifies, the importance of product quality has grown in the minds of both academics and marketing professionals. Quality is a crucial aspect of modern-day businesses as it differentiates a business from its competitors (Porter, 1997). Quality is no longer seen as a way to gain a competitive edge, but as a fundamental expectation of customers from all organizations (Kandampully, 1996). This is because product quality not only impacts a consumer's decision to purchase, but also has an impact on market share, profitability, brand strength, and brand equity (Aaker & Jacobson, 1994; Garvin, 1984). Customers have a wide variety of options to choose from, and they are becoming increasingly discerning in their purchasing decisions (Butler and Peppard, 1998). Therefore, companies must ensure that products are of superior quality to influence customer satisfaction (Prasadh, 2018). Satisfied customers are more likely to return for future purchases, and are also more likely to recommend it to others (Becerra and Badrinarayanan, 2013; Kumar, and Gupta, 2016).

In a crowded market it is difficult to stand out, but offering high quality products can help to set a business apart. By continually monitoring and improving product quality, businesses can ensure that they are meeting the needs and expectations of their customers as it helps to build trust and loyalty among customers, differentiates a business from its competitors, drive sales and increases brand awareness, which can in turn lead to increased profitability (Li and Green, 2011; Chaudhuri and Holbrook, 2001). In simple terms, higher product quality leads to higher customer satisfaction, which in turn supports higher prices and lower costs (Kotler, 2012). This makes customer satisfaction a crucial driver for survival, competitiveness, and growth and plays a vital role in creating customer loyalty. Customer loyalty can give companies an edge over their competitors, in addition to benefits such as lower expenses, higher prices, and increased profits (Mokhtar, et al., 2011). Loyal customers promote the product through positive word of mouth, make repeat purchases, and persuade others to try the product (Jahanshahi et al., 2011).

The relationship between product quality and customer satisfaction is well-documented across various industries, such as automobiles, healthcare and retail sector (Jahanshahi et. al, 2011; Lee et. al., 2012; Yuen and chan, 2010). The results of these studies vary as there is an inconsistent measurement of product quality used across studies (Molina-Castillo et al., 2013) with limited research on durable goods (Guru, and Paulssen, 2020).

Objective of the study

In light of above research findings along with growing importance of product quality for corporate success and growth, an attempt has been made in the present study to study the impact of product quality on customer satisfaction. The study will provide an enhanced understanding of perceived product quality for better understanding of customer satisfaction besides an effective tool to meet competition.

Literature Review

Product Quality

Quality management has a long history dating back to the dawn of manufacturing and has attracted the attention of researchers and practitioners for decades as a major competitive weapon for businesses all over the world. "Quality is an attitude to overall superiority of a product or service that an organisation offers to its customers" (Zeithamal, 1988). According to Garvin, (1987) "Quality refers to a product's ability to satisfy a customer's need and is deemed to be of higher quality". However, Tjiptono et al. (2015) believed that product quality involves a combination of factors such as the goods and services offered, the people involved, the processes used, and the environment in which they are provided. On the other hand, Kotler et al. (2008) have a more

straightforward definition of product quality which they state is the ability of a product to perform its intended purpose effectively. This includes factors such as durability, reliability, accuracy, ease of use, and serviceability. Lamb et al., (2011) has a different approach, defining product quality based on six specific characteristics, including dependability, longevity, ease of maintenance, ease of use, a well-known brand name, and affordability while Lefkoff and Mason (1993) described product quality by three main attributes, namely, features, advantages, and image.

A review on above statements leads us to conclude that quality is a complex concept with multiple dimensions that cannot be fully captured by any single definition. Garvin (1984) came up with five approaches to define quality, namely, transcendent approach, product-based approach, user-based approach, manufacturing-based approach, and value-based approach. These approaches have roots in various disciplines to capture the complexity of the quality construct (Sebastianelli and Tamimi, 2002) and are discussed below: -

The transcendent approach of quality is derived from philosophy which considers quality as synonymous with 'innate excellence'. Transcendent quality recalls Plato's concept of beauty as an "ideal form." Under this approach, a product or service possesses excellence based on its subjective relationship to some standard. The ability to determine that subjective relationship can only be developed through experience.

Product-based approach has its roots in economics. Differences of the elements or attributes infatuated by the product are considered to reflect differences in quality (Garvin, 1984). This approach sees a products or service's quality as quantifiable based on certain ingredients or attributes.

The user-based approach has its roots in marketing and measures quality according to how well end-users believe a product or service meets their needs (Juran, 1951). In this approach, the focus is on understanding the user's requirements, preferences, and experience with the product, and using this information to drive improvements and ensure that the product meets their needs.

The manufacturing- based approach has its origin from operation and production management, hence it is called as conformance to specification (Crossby, 1979). This approach focusses on cost reduction and quality is being reflected as an outcome of engineering and manufacturing practices (Crosby, 1979). This approach emphasizes factors such as production efficiency, process control, and material management, and seeks to minimize defects and errors in the manufacturing process.

Lastly, in **value-based approach**, products or services increase its value as they offer greater benefits with respect to costs (Feigenbaum, 1951). Under this approach, products or services increase its value as they offer greater benefits with respect to costs. The higher the value, the higher the perceived quality.

Quality is measured in terms of the buyer's interpretation (Kotler et al 1999). The overall subjective judgement of quality in relation to the expectation of quality is known as perceived quality. Customer's view of the quality product can be affected by both of its internal features and external factors. The inherent features, such as the material, colour, and appearance, are part of the physical makeup of the product and can only be changed by altering the product itself. External factors, like the brand name, place of origin, and the reputation of the store selling the product are non-physical attributes that can impact a person's perception of the product's quality (Olson and Jacoby, 1972).

In today's business landscape, companies prioritize product quality as it greatly impacts customer satisfaction, profitability, organizational performance, and consumer loyalty (Seth et al., 2005). When customers have a positive perception of product's quality, they tend to be more loyalty towards the company and demonstrate more supportive behaviors (Yuen and Chan, 2010). Many researchers (Sethi, 2000; Jahanshahi et al., 2011; Gervais, 2015; Hoe and Mansori, 2019; Guru and Pualssen, 2020) have confirmed that product quality plays a crucial role in increasing business profitability, export success, and the success of new products in the market.

Despite the fact that product quality contributes significantly to the success and growth of a business, there is still no agreement among researchers on the number of dimensions that make up product quality. For instance, Alhire et al. (1996) identified four dimensions of product quality, namely, performance, reliability, features and durability but Madu et al., (1995) recognized only two dimensions, viz., features and reliability. Tamimi and Sebastianelli (1996) believed that there are three components of product quality as reliability, aesthetics, and performance while as Brucks et al. (2000) listed seven dimensions like ease of use, features, durability, serviceability, performance, perceived quality, and aesthetics. Garvin's (1984) model has identified eight dimensions which have been widely reported in several research studies (Hoe and Mansori, 2019; Jakpar et al., 2012; Syahrial et al., 2018). According to Garvin (1987), customer perceptions of product quality may vary with high rankings on one dimension and low rankings on another. These dimensions are often interdependent and changes in one may result in trade-offs with another (Kenyon and Sen, 2016). A brief explanation of these dimensions is given bellow: -

1. **Performance** refers to how well a product performs its intended function.
2. **Reliability** refers to the consistency and dependability of a product over time.
3. **Ease-of-Use** refers to how easy a product is to use and understand.
4. **Features** refer to the specific capabilities and attributes of a product.
5. **Durability** refers to a product's ability to withstand wear and tear over time.
6. **Aesthetics** refer to the visual appearance and design of a product.
7. **Serviceability** refers to the ease of repairing or maintaining a product.
8. **Perceived quality** refers to how a customer perceives the overall quality of a product, including factors such as brand name, brand image and advertising.

Customer Satisfaction

Customer satisfaction has been a topic of great interest among marketing practitioners, consultants, and researchers (Greve and Schlüschen, 2018). This is due to the critical role it plays as one of the key elements of business action plan and a goal for all

business activities especially in today's dynamic and competitive market (Abdullah et al., 2014). The notion of customer satisfaction has been probed from various perspectives. Blythe and Martin (2019) for instance argue that "while everyone knows what satisfaction means, it clearly does not mean the same thing to everyone". Kotler and Armstrong (1999) describe satisfaction as the "extent to which an organisation's perceived performance matches a buyer's expectations". This definition is supported by Huffman et al. (1995) who asserted that customer satisfaction is a short term, transaction specific measure of whether customers' perceptions match or exceed their expectations. In fundamental terms, the idea of customer satisfaction is defined as the level of customers' feeling of delight or dismay resulting from comparing the performance of products and services in relation to their prior supposition (Greve and Schlüschen, 2018). Customer satisfaction is, therefore, argued to be a psychological level construct (Hill and Alexander, 2017). For this reason, customer satisfaction can be conceptualized as either an emotional or cognitive response to products and services of organizations (Grönroos et al., 2015) which involves an intrapersonal feeling of wellbeing and pleasure resulting from obtaining what one hopes for and expects from an appealing product and/or service (Blythe and Martin 2019). There are three main components of customer satisfaction, namely an emotional or cognitive response, expectations and lastly period (Abdullah et al., 2014). Thus, in assessing customer satisfaction, it is essential to examine the emotional/cognitive response of customers in relation to their expectations within a specific period of time (Greve and Schlüschen, 2018.).

Companies are investing significant resources to improve the customer's level of satisfaction (Durvasula, et al. 2004) because customer satisfaction immediately promotes customer loyalty which is a critical factor in sustaining long-term success and growth (Ranaweera and Prabhu, 2003). It is a major differentiator and crucial component in the business strategy in a cutthroat business environment (Munusamy et al, 2010). Sivadas and Barker (2000) found that customer satisfaction affects interpersonal attitudes, repeat business, and referrals. Customer satisfaction indicates the general health of the organization, its future prospects, and provides companies with many benefits including forming consumer loyalty, preventing customer churn, reducing marketing costs, and enhancing business reputation (Fornell 1992). Therefore, the success of the firm's strategy depends on the company's ability to fulfil its promises to consumers, which in turn leads to forming long-term, profitable relationships (Carpenter and Fairhurst 2005). Chow and Zhang (2008) proposed that it is important for managers to identify satisfying product attributes from dissatisfying ones, because switching is more likely to occur as a result of dissatisfaction.

Development of Research Hypotheses

Product quality is closely related to customer satisfaction and is the main goal of marketing activities undertaken by every company (Pemayun and Seminari, 2020). The notions of product quality and customer satisfaction have been proven to be extremely crucial by academic researchers who investigate consumer evaluations and by practitioners who wish to build competitive advantages and customer loyalty (Iacobucci et al, 1995). The links between product quality and customer satisfaction are widely researched in services settings (Cronin et al., 2000; McDougall and Levesque, 2000; Tam, 2004) and in the product context also (Olsen, 2002; Tsiotsou, 2006; Beneke et al., 2013).

Research has shown that product quality is a critical determinant of customer satisfaction (Baker & Crompton, 2000; Cronin et al., 2000). Jahanshahi et al. (2011) and Brucks et al. (2000) have also established that product quality greatly influences customer satisfaction. Other researchers (Beneke et al. (2012), Etemat-Sajadi and Rizzuto (2013), Tumangkeng (2013), Suchánek et al. (2014), Djumarno et al. (2018) and Albari and Kartikasari, (2019) have also supported this fact that product quality influences customer satisfaction. These studies have consistently demonstrated that the quality of a product as perceived by consumers is a key factor that affects customer satisfaction. These research findings also suggest that a high-quality product leads to increased consumer satisfaction which in turn could lead to increased customer loyalty. Based on the above-mentioned literature, it is hypothesized that: -

H1: There is positive relationship between product quality and customer satisfaction

Moreover, studies (Shaharudin et al. 2011: Hoe and Mansori, 2018; Bayu et al 2019; Ghosh and Chakraborty, 2020) are evident that eight product quality dimensions, viz., Performance, Features, Ease of Use, Aesthetics, Durability, Reliability, Serviceability, Perceived quality have direct relationship with consumer satisfaction. Hence, in view of these evidences, following corresponding sub-hypotheses were formulated: -

H1a: There is a positive relationship between Performance and Customer Satisfaction.

H1b: There is a positive relationship between Reliability and Customer Satisfaction.

H1c: There is a positive relationship between Ease of Use and Customer Satisfaction.

H1d: There is a positive relationship between Durability and Customer Satisfaction.

H1e: There is a positive relationship between Features and Customer Satisfaction.

H1f: There is a positive relationship between Aesthetics and Customer Satisfaction.

H1g: There is a positive relationship between Serviceability and Customer Satisfaction.

H1h: There is a positive relationship between Perceived quality and Customer Satisfaction.

Research Methodology

This study delves into the aspect of product quality considering its eight dimensions, namely, performance, features, ease of use, aesthetics, durability, reliability, serviceability, and perceived quality, with the objective being to evaluate the impact of product quality on customer satisfaction by means of a cross-sectional survey. To establish the scale items for Product Quality, a literature review was conducted which led to the identification of 38 items sourced from previous research studies (Kianpour et al., 2014; Syahrial et al., 2018; Guru and Pualssen, 2019). To measure customer satisfaction, seven scale items were adapted from the works of Maxham and Netemeyer, (2002) and Kuo et al., (2009) and modifications were made to the measurement scales to enhance their validity and reliability.

The questionnaire was divided into three sections: the first focused on the demographic profile of participants, including their age, gender, education level, income, and occupation. The second section evaluated product quality, and the third assessed customer satisfaction. Respondents were asked to rate their assessment on a 5-point Likert scale, with choices ranging from strongly disagree (1) to strongly agree (5). Four consumer durable products (Car, Refrigerator, washing-machine and Television) were chosen because these products are used by most of the households in Jammu and Kashmir i.e. Refrigerator (26%), Washing Machine (21%), Television (40%) and Car (23.7%) (Source: NFHS-4 and NFHS-5 2019-21). The study was conducted in Jammu and Kashmir. However, the study was limited to ten most populous districts, with five from Jammu i.e., Jammu, Rajouri, Kathua, Udhampur, Poonch and five from Kashmir i.e., Srinagar, Anantnag, Baramulla, Kupwara and Budgam. Owing to paucity of time and financial resources, present study has used Quasi-probability sampling in the form of stratified random sampling. Every fourth person encountered in common areas such as shops and households were selected for the survey, and a total of 560 participants were found suitable for data analysis. The researcher conducted the survey personally in four months' time starting from August 2021 to November 2021. The data was analysed and processed using the SPSS and Smart-PLS software.

The present study constitutes a sample where majority respondents (55.8%) were males followed by females (44.2%). In terms of age heavy participants (34.30%) belonged to the age group of 31-40 years followed by the age group of 20-30 years (30.90%). Above 41-50 years were the least participants (26.5%) followed by above 51 age group (8.0%). With respect to educational qualifications, professional/technical respondents were highest participants (32.0%) followed by post-graduates (28.4%). Graduates were least participants (21.7%) followed by below 12th (17.9%). With respect to income, majority respondents (40.6%) belonged to the monthly income group of below Rs 30,000, followed by (38.8%) the income group of (Rs 31,000-60,000), 15.6% (61,000-90,000) and above the income group of above 91000 per month were the least (5.0%). In terms of occupation majority respondents (46.9%) were students followed by employees (31.7%) while as others were least participants (21.5%). The effort was made to give a balanced representation to all demographic characteristics to make the sample representative.

Exploratory Factor Analysis (EFA)

Product quality

Exploratory factor analysis (EFA) using the principal component analysis method (PCA) was carried out on 38 scale items to determine scale dimensionality. The construct validity was tested by applying Bartlett's Test of Sphericity and the Kaiser–Mayer–Olkin Measure of sampling adequacy to analyze the strength of association among variables. The findings of KMO test are 0.852, which exceeds satisfactory value of 0.50 (Kaiser, 1974). The value of Bartlett's test of Sphericity is 0.000, which meets the criteria of value lower than 0.05. The results of principal component analysis show the eigen value is more than 1, which extracted thirty-two items (32) grouped into eight factors with explained variance of 70.233 percent in the data. Six (06) items (P4, R1, S6, Pq1, E5, A5) were deleted as the factor loadings were below the threshold value of 0.50. The communalities of thirty-two (32) items ranged from 0.526 to 0.808 indicating that a large amount of variance has been extracted by the factor solution. The eight factors were labelled as **F1- Performance, F2- Reliability, F3 -Ease of Use, F4 – Durability, F5 – Features, F6 – Aesthetics, F7 – Serviceability, and F8 – Perceived quality.**

Table: 1.1 KMO and Bartlett's Test, Communalities, Total Variance Explained and Rotated Component Matrix of Product Quality

Table 1.1 Rotated Component Matrix ^a									
	Communalities	Factors							
		1	2	3	4	5	6	7	8
P1	0.808	0.891							
P2	0.727	0.844							
P3	0.713	0.820							
R2	0.743		0.852						
R3	0.770		0.868						
R4	0.727		0.835						
E1	0.552			0.681					
E2	0.657			0.801					
E3	0.696			0.811					
E4	0.588			0.741					
D1	0.557				0.683				
D2	0.596				0.719				
D3	0.640				0.768				
D4	0.673				0.771				
D5	0.537				0.645				
F1	0.582					0.718			
F2	0.743					0.838			

F3	0.723					0.823			
F4	0.770					0.839			
F5	0.676					0.748			
A1	0.602						0.738		
A2	0.648						0.789		
A3	0.541						0.704		
A4	0.526						0.658		
S1	0.727							0.795	
S2	0.751							0.825	
S3	0.668							0.781	
S4	0.682							0.774	
S5	0.699							0.780	
Pq2	0.594								0.725
Pq3	0.773								0.863
Pq4	0.712								0.796
Eigen Values		7.192	2.856	2.507	2.229	2.181	1.886	1.822	1.802
Cumulative Variance		22.476	31.400	39.233	46.199	53.016	58.910	64.603	70.233

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Customer Satisfaction

Exploratory factor analysis (EFA) with a principal component method was again conducted on Customer satisfaction construct in order to detect the scale's dimensionality. The Bartlett's Test of Sphericity yielded a result of 0.000, which is less than 0.05 (Bartlett, 1950), which satisfies the requirement of a value less than 0.05 for the factor analysis to be accepted as adequate. The measure of Sampling Adequacy by Kaiser-Meyer-Olkin (KMO) is 0.827 which is above the minimum value of 0.6 (Hoque et al., 2018). The study applied Principal Component Analysis (PCA) with a Varimax Rotation and Eigen value equal to or more than 1. The results extracted five items (5) with an explained variance of 61.261 percent (Table 1.2). Two items (CS2, CS7) were deleted because communalities were less than 0.5. Communalities of five (5) items values above 0.50 ranged from 0.556 to 0.727, indicating a moderately good correlation between the individual items. No factor was extracted from the analysis (Table: 1.2).

Table: 1.2 KMO and Bartlett's Test, Communalities, Total Variance Explained and Rotated Component Matrix of Customer Satisfaction

Construct	Item No	Elements	Communalities	Rotated Component Matrix
Customer Satisfaction	CS1	I am satisfied with the overall experience of my product	0.566	Only one component was extracted
	CS3	I am satisfied with the product functions	0.595	
	CS4	The product's functions fulfilled my needs	0.727	
	CS5	I think of buying the same product next time	0.556	
	CS6	I am satisfied with my decision to purchase the product	0.620	
Eigen value		3.063		
Explained variance		61.261		

Extraction Method: Principal Component Analysis

Measurement Model Assessment (Confirmatory Factor Analysis)

Reliability and validity of the construct is assessed through Cronbach's alpha, composite reliability and average variance extracted (AVE). The Fornell-Larcker criterion, and heterotrait-monotrait (HTMT) ratio of correlations is used to examine discriminant validity (Hair et al, 2017). The reliability of the scales was established as the two scales registered their values above

0.7 threshold (Table: 1.3) for Cronbach's alpha coefficient (Cronbach, 1970). Convergent validity was assessed based on average variance extracted (AVE), composite reliability values (CR) (Fornell and Larcker, 1981). Based on the results presented in Table 1.3, both AVE and CR values exceed the acceptable thresholds of 0.5 and 0.7 (Fornell and Larcker, 1981; Bagozzi and Yi, 1988). Hence Construct reliability is established.

Table 1.3 Construct Reliability and Validity

Construct	Dimensions	Cronbach's Alpha	Average Variance Extracted (AVE)	Composite Reliability (>0.6 or 0.7)
Product Quality	Performance	0.834	0.623	0.831
	Reliability	0.828	0.593	0.850
	Ease of Use	0.837	0.524	0.814
	Durability	0.806	0.561	0.865
	Features	0.882	0.682	0.915
	Aesthetics	0.853	0.530	0.818
	Serviceability	0.891	0.637	0.913
	Perceived Quality	0.818	0.689	0.869
Customer Satisfaction		0.796	0.594	0.854

Discriminant Validity

Discriminant validity is established through Fornell and Larcker Criterion and HTMT Ratio. The Fornell and Larcker criterion results in Table 1.4 clearly shows that the square root of AVE (in bold) for all the constructs is higher than its highest correlation with any other construct (Fornell-Larcker criterion, 1981). The results displayed in Table 1.5 indicate that the HTMT criterion was met as all the values in the table are less than 0.85 (Henseler et al., 2015). All model evaluation criteria for the measured constructs have been met, providing support for their discriminant validity.

1.4 Fornell and Larcker Criterion

	AES	CS	DUR	EOU	FEA	PER	PQT	REL	SER
AES	0.729								
CS	0.282	0.730							
DUR	0.275	0.395	0.750						
EOU	0.257	0.305	0.334	0.758					
FEA	0.294	0.306	0.318	0.195	0.826				
PER	0.186	0.180	0.214	0.253	0.100	0.790			
PQT	0.278	0.325	0.279	0.267	0.252	0.101	0.830		
REL	0.102	0.161	0.140	0.065	0.104	0.131	0.021	0.831	
SER	0.315	0.304	0.421	0.246	0.381	0.148	0.271	0.147	0.834

1.5 Heterotrait-Monotrait Ratio (HTMT)

	AES	CS	DUR	EOU	FEA	PER	PQT	REL	SER
AES									
CS	0.361								
DUR	0.354	0.482							
EOU	0.332	0.399	0.427						
FEA	0.362	0.358	0.368	0.231					
PER	0.255	0.253	0.292	0.340	0.126				
PQT	0.371	0.401	0.342	0.344	0.305	0.138			
REL	0.124	0.199	0.18	0.113	0.125	0.162	0.044		
SER	0.385	0.355	0.491	0.288	0.425	0.178	0.323	0.173	

Note; AES: Aesthetics; CL: Customer Loyalty; CS: Customer Satisfaction; DUR: Durability; EOU: Ease of Use; FEA: Features; PER: Performance; PQT: Perceived quality; REL: Reliability; SER: Serviceability.

Structural Model Assessment

The results of significance of path coefficients with t-statistics, standard deviation and p-values are shown in below Table 1.5. Additionally, the model's performance was evaluated using the standardized root mean square residual (SRMR) metric. The obtained value of SRMR was 0.051, which is below the threshold of 0.10, indicating that the model has an acceptable fit (Hair et al., 2016). Furthermore, R² values of the model is 18.8 % which is greater than 0.10 and are regarded high in areas like behavioural sciences (Falk and Miller, 1992; Hair et al., 2014).

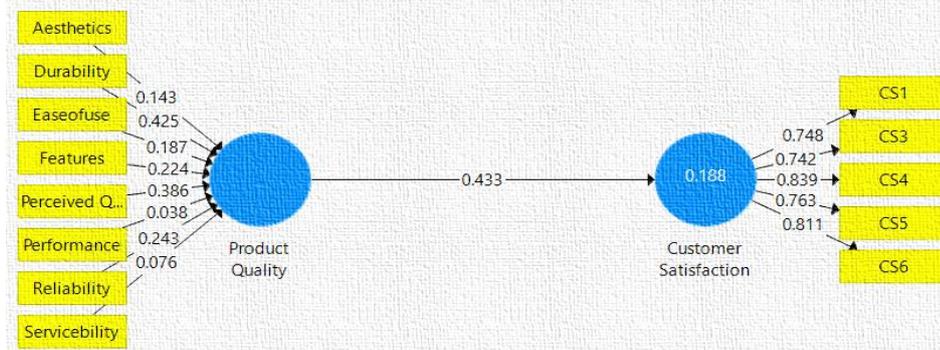


Fig 1.1 Structural Model of Product Quality and Customer Satisfaction

Results, Discussion and Suggestions

The major focus of the research objective was to study the impact of product quality on customer satisfaction. The corresponding hypothesis for the study objective was that there is a positive relationship between product quality and customer satisfaction. The study revealed that there is a positive and significant ($\beta=0.433$; $Tvalue=11.99$; $pvalue=0.000$) relationship between product quality and customer satisfaction. These findings align with other research studies (Abdullah and Rozario 2009; Jakpar et al., 2012; Suchánek et al., 2014; Albari and Kartikasari, 2019).

This implies that an improvement in product quality will raise consumer satisfaction because it directly impacts a business's ability to retain customers and attract new ones. When a product meets or exceeds customer expectations in terms of quality, customers are more likely to be satisfied with their purchase and have a positive experience. In other words, it results in repeat purchases, recommending the product to others and spreading positive word of mouth communication. A high-quality product can differentiate a business from competitors and create a competitive advantage. Improving the quality also generate cost savings for the business in the long-term, as it can reduce product defects, warranty claims, and customer service costs. Furthermore, product quality is often a deciding factor in customer decision-making. In a competitive market, customers have multiple options and are more likely to choose a company that has a proven track record of delivering high-quality products. Therefore, companies that prioritize product quality have an advantage over those that do not.

Additionally, the bootstrapping technique was used to test the statistical significance of the eight dimensions of product quality on customer satisfaction which revealed that hypotheses **H1b (Reliability -> Customer Satisfaction)**, **H1d (Durability ->Satisfaction)**, **H1e (Features ->Satisfaction)**, **H1f (Aesthetics ->Satisfaction)** and **H1h (Perceived quality ->Satisfaction)** are **supported** and are in line with the other studies (Shaharudin et al. 2011; Hoe and Mansori 2019; Ghosh and Chakraborty, 2020). It was observed that for consumer durable goods, perceived quality and durability have the highest impact on customer satisfaction, followed by reliability, features, and aesthetics.

The results (table 1.6) revealed that there is a positive and significant ($\beta=0.203$; $t-value=4.082$; $p-value=0.000$) relationship between the durability dimension of product quality and customer satisfaction. This suggests that customers' desire a product that is of the highest quality and operates without error for most of its typical lifespan. In a nutshell, a sturdy product will satisfy buyers. The results also infer that there is a positive and significant ($\beta=0.107$; $t-value=2.513$; $p-value=0.006$) relationship between the Reliability dimension of product quality and customer satisfaction. This suggests that a product will satisfy customers if it is dependable, can be used more frequently without raising concerns about it malfunctioning, and should provide a pleasant using experience. Customers expect products and services to perform as advertised and to be dependable. When a product or service is reliable, it meets or exceeds customer expectations, leading to increased customer satisfaction. Further, results also showed that there is a positive and significant ($\beta=0.106$; $t-value=2.484$; $p-value=0.007$) relationship between the features of product quality and customer satisfaction. From these findings, it is evident that customers are satisfied when the product has updated features. This study also demonstrates that there is a positive and significant ($\beta=0.073$; $t-value=1.837$; $p-value=0.033$) relationship between the aesthetic dimension of product quality and customer satisfaction. The findings of this study imply that the way a product or service looks, can greatly influence a customer's perception. Aesthetically pleasing designs can make a product or service more attractive and appealing, which lead to increased customer satisfaction and loyalty. Additionally, a product or service that is aesthetically pleasing will also be perceived as higher quality and more valuable, which can lead to increased sales and profitability. From the findings of the study, it was also observed that there is a positive and significant ($\beta=0.174$; $t-value=4.161$; $p-value=0.000$) relationship between the perceived quality of product quality and customer satisfaction. The findings of this study lead us to conclude that customers are satisfied when the product communicates superiorly with the customer through brand name and brand image.

Table 1.6 Hypotheses Results

Hypothesis	Paths	Beta	(STD)	T Stat	P Values	Results
H1	Product quality-> Customer Satisfaction	0.433	0.041	11.99	0.000	Supported
H1a	Performance -> Customer Satisfaction	0.004	0.036	0.119	0.452	<i>Rejected</i>
H1b	Reliability -> Customer Satisfaction	0.107	0.043	2.513	0.006	Supported
H1c	Ease of Use -> Customer Satisfaction	0.014	0.038	0.376	0.353	<i>Rejected</i>
H1d	Durability -> Customer Satisfaction	0.203	0.050	4.082	0.000	Supported
H1e	Features -> Customer Satisfaction	0.106	0.043	2.484	0.007	Supported
H1f	Aesthetics -> Customer Satisfaction	0.073	0.040	1.837	0.033	Supported
H1g	Serviceability -> Customer Satisfaction	0.041	0.043	0.962	0.168	<i>Rejected</i>
H1h	Perceived quality -> Customer Satisfaction	0.174	0.042	4.161	0.000	Supported

In addition, the results also indicate that H1a (Performance ->Satisfaction), H1c (Ease of Use ->Satisfaction) H1g (Serviceability ->Satisfaction) are not supported as the calculated p-values are more than 0.05. Therefore, hypotheses **H1a (performance have positive and significant impact on customer satisfaction)** was rejected which is in line with the research finding of Hoe and Mansori (2019), **H1g (Serviceability has positive and significant impact on customer satisfaction)** was rejected and falls in line with the study of Jakpar et al., (2012) and **H1c (Ease of Use have positive and significant impact on customer satisfaction)** was also rejected. This relationship has not been examined in the extant literature so far.

Suggestions

The study confirmed that product quality influences customer satisfaction which suggests that organisations must continuously upgrade their products to fall in line with changing customer requirements. An in-depth analysis of product quality dimensions revealed that Perceived Quality, Durability, Reliability, Features and Aesthetics are the most important product quality dimensions. Accordingly, product managers must bring this change in their offerings (products) to influence customer satisfaction. Companies should ensure that their products align with customer needs and preferences, such as perceived quality, durability, reliability, features, and aesthetics. This should be reflected in their marketing strategies, allowing product and operational managers to allocate resources more efficiently towards improving product quality by focusing on these critical dimensions.

The study confirmed there is no direct relationship between serviceability dimension and customer satisfaction, yet buyer sees the product and its post-purchase assistance as one cohesive unit. Therefore, marketing managers should develop a comprehensive customer service strategy that includes clear guidelines for handling customer complaints, inquiries and providing technical support, train customer service representatives on how to effectively communicate with customers, provide multiple channels for customers to get support, such as phone, email, live chat and social media, create a knowledge base and FAQ section where customers can find answers to common questions and a self-service platform where customers can find solution by themselves, it can be a web page, or mobile application.

The results of the study also confirmed that ease-of-use dimension and customer satisfaction has no significant relationship. Marketing managers should simplify the user interface and navigation to make it more intuitive and user-friendly and provide clear and concise instructions and explanations for using the product. The manufacturing firms can also incorporate technology like Artificial Intelligence (AI) or chatbot to assist customers in case they have any problem or question related to the usage of the product.

Limitations and Directions for Future Research

The current study has limitations, specifically its cross-sectional approach, which may impact its conclusions about the relationship between product quality and customer satisfaction. Additionally, Kumar et al., (2013) have shown that customer satisfaction and loyalty intentions can vary when measured at different times. Future research could examine this relationship using a longitudinal approach. Another limitation of the current study is that it is limited to a specific region and time-period. Therefore, future research could expand to other industries, markets and cultures. Additionally, it could be beneficial to investigate other factors such as brand reputation and customer expectations in product quality-satisfaction relationship.

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