

Perceived Product Quality and Consumers' Intent to Purchase Sustainable Products

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ABSTRACT

Perceived product quality is central to how consumers evaluate products and form purchase intentions, while sustainable product development requires these evaluations to be considered alongside environmental, social, and economic concerns. This study examines users' perceived product quality and purchase related considerations for sustainable electric kitchenware products. A quantitative questionnaire was administered to 150 end users at electrical and electronic kitchenware chain stores. The instrument examined shopping background and product quality evaluation, using an electric rice cooker as the product stimulus. Descriptive analysis was conducted using SPSS. The findings show that 48.0% of respondents preferred purchasing electric kitchenware from a physical kitchenware store and 49.3% reported discount promotions as the most common purchase occasion. Among twelve purchase factors, design recorded the highest mean ($M = 4.03$), followed by quick ordering and quality (both $M = 3.87$). In product quality evaluation, 74.0% identified users as the principal stakeholder for defining product quality, while 52.0% selected quality as the most important contributor to good product design. The findings were synthesized into a Sustainable Product Design Model integrating form, function, safety, sustainability, quality, commerciality, and innovation with the social, environmental, and economic dimensions of sustainability. The study provides an empirically grounded design reference for product designers, manufacturers, marketers, and design educators.

Keywords: *Perceived Product Quality, Purchase Intention, Consumer Quality Perception, Sustainable Kitchenware Products.*



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1 INTRODUCTION

Perceived product quality concerns consumers' overall judgement of a product's quality or excellence in relation to its intended purpose. Because this judgement is formed through interaction, prior experience, and expectations, it represents an important customer based dimension of product success. Perceived quality is also associated with product reliability, durability, and the ability of a product to satisfy user requirements. As market competition intensifies, perceived product quality has become increasingly relevant to both academic research and marketing practice (Vantamay, 2007). Manufacturers and retailers therefore compete not only on functional performance, but also on how effectively a product captures users' attention and communicates quality within increasingly competitive market conditions (Lin et al., 2013).

Understanding perceived quality provides firms with a basis for differentiating products and strengthening their market position. A product that is interpreted as high quality can reinforce product

recognition, organisational reputation, and user confidence. Contemporary product development consequently involves multiple perceived quality attributes rather than a single technical measure. Styliadis et al. (2020) noted that delivering superior perceived quality can require additional cost and development time; therefore, quality decisions need to be balanced across relevant product dimensions rather than pursued in isolation. This reinforces the need to understand which dimensions users actually prioritise.

A persistent reason for product failure is the mismatch between what a company offers and what customers need (Pride & Ferrell, 2010). Product success therefore depends on designing with users' needs, experiences, and perceptions in mind. The broader business literature similarly emphasises that products capable of meeting user expectations are better positioned to recover from difficult market entry and to grow (Patel, 2015). From a design perspective, establishing positive quality perceptions early in the customer journey is more effective than attempting to reverse negative perceptions after a product has entered the market.

Purchase decisions are shaped by a combination of priorities, perceptions, and situational influences (Saleem et al., 2015; Muhammad Firdaus et al., 2020). Prior research has shown that perceived product quality can be influenced at multiple stages of the buying process (Takeuchi & Quelch, 1983; Muhammad Firdaus et al., 2020). Situational conditions such as store location and layout, ambient cues, social context, timing, purchase motives, and consumers' moods may also affect buying behaviour. Promotional mechanisms such as discounts can further shift purchase decisions, including products that consumers had not initially intended to buy. Consequently, perceived quality should be examined as part of a broader purchase decision context rather than as an isolated product attribute.

Against this background, this study aims to analyse users' responses concerning perceived product quality and purchase intention when purchasing sustainable electric kitchenware products. It focuses on the purchase environment, the factors prioritised by users, and users' evaluation of seven product design dimensions. The study contributes an empirically derived Sustainable Product Design Model intended to support manufacturers, product designers, design educators, and other relevant stakeholders in integrating user defined quality expectations with sustainability considerations during product planning and development.

2 LITERATURE REVIEW AND CONCEPTUAL BACKGROUND

2.1 Perceived Product Quality

Quality is a fundamental concern in users' everyday product experience and in business strategy. ISO 9000:2000 conceptualises quality in terms of the extent to which inherent characteristics fulfil requirements (Mandru et al., 2009; Muhammad Firdaus et al., 2020). Golder et al. (2012) similarly positioned quality as a central competitive mechanism: firms compete on quality, consumers search for it, and markets evolve through it. Product quality measurement should therefore be treated as a means of supporting improvement rather than as an end in itself. Quality assurance requires organisations to determine how effectively products meet applicable standards, regulations, user requirements, and expectations.

Perceived product quality extends this technical view by focusing on users' interpretation of a product. Aaker and Joachimsthaler (2000) described perceived quality as an association that can influence brand meaning and company profitability. Related work links perceived product quality with product image and reputation (Garvin, 1987, 1988; Aliyah, 2016; Muhammad Firdaus et al., 2020), brand equity and perceived superiority over alternatives (Aaker, 1991; Chernatony, 2009; Richardson, 1997; Beneke et al., 2013), and the development of customer loyalty (Brakus et al., 2009; Pan et al., 2012; Akdeniz et al., 2014; Morgado et al., 2016). Agarwal and Teas (2004) further argued that consumers evaluate product quality through product performance, conformance with manufacturer specifications, and product specific attributes.

Although literature offers multiple definitions, a common principle is that perceived product quality represents users' overall judgement of the characteristics and performance cues that signal whether a product can satisfy their needs and expectations. Because favourable quality perceptions can contribute to satisfaction, loyalty, and repeated purchase, perceived quality should be considered throughout product development rather than evaluated only after market launch.

2.2 Users' Purchase Intention

Purchase intention is closely associated with consumer perception, behavioural choice, and the long term market performance of firms. Previous studies have linked customer purchase intention with organisational growth and profitability (Reichheld & Scheffer, 2000; Abraham et al., 2015; Zelazny, 2017; Ehrenberger et al., 2015; Roudposhti et al., 2018). Amoroso et al. (2016) described purchase intention as the strength of an individual's decision or willingness to engage in a purchase related behavior, while Kasemsap (2017) defined it as a consumer's plan to purchase a specific product or service in the future. Purchase intention can therefore be understood as a behavioural predisposition that connects consumer perceptions with subsequent purchasing behaviour.

Purchase intention is also context dependent. In online environments, for example, trust in an online store can increase consumers' willingness to purchase from that retailer (Gefen et al., 2003). Morwitz (2014) noted that purchase intention measures are frequently used in concept and product testing to estimate demand for new and existing products. However, an intention does not necessarily become an actual purchase; consumers may plan to replace a product within a specific period yet fail to act on that plan. This distinction is important when interpreting descriptive evidence on purchase intention.

2.3 Consumer Buying Behavior and Decision Making

Consumer buying behaviour encompasses the attitudes, preferences, intentions, actions, and decisions associated with purchasing products or services (Srinivas, 2015). It includes activities occurring before a purchase in both online and offline settings, such as consulting search engines, engaging with social media, and seeking information from other sources (Ehrlich, 2020). Examining these behaviours helps organisations understand how consumers move from need recognition to product evaluation and purchase, thereby supporting more appropriate product and marketing decisions.

The traditional consumer buying decision process is commonly described as a five stage sequence (Stankevich, 2017). The framework, originally associated with John Dewey's 1910 work, conceptualises the consumer journey as need recognition, information search, evaluation of alternatives, purchase decision, and post purchase evaluation. Although contemporary purchase journeys may not always follow a strictly linear sequence, the framework remains useful for locating the points at which perceived quality can influence consumer judgement.

As illustrated in Figure 1, the process begins with need recognition, when a consumer identifies a need that may be satisfied through a product or service. Once the need is recognised, consumers search for information and possible solutions. The extent of this search varies with the complexity of the decision and may draw on personal contacts such as family, friends, and colleagues, as well as electronic media, printed sources, recommendations, and previous purchase experience.

The third stage is the evaluation of alternatives, during which consumers compare options using objective characteristics such as price, aesthetics, quality, quantity, and value added features, as well as subjective characteristics such as product perception, company reputation, perceived product quality, and brand value. This is followed by the purchase decision, in which the consumer selects the option judged most appropriate to the identified need and intended purchase. Finally, post purchase evaluation occurs after the product has been used, when consumers assess whether the decision met their needs and expectations.

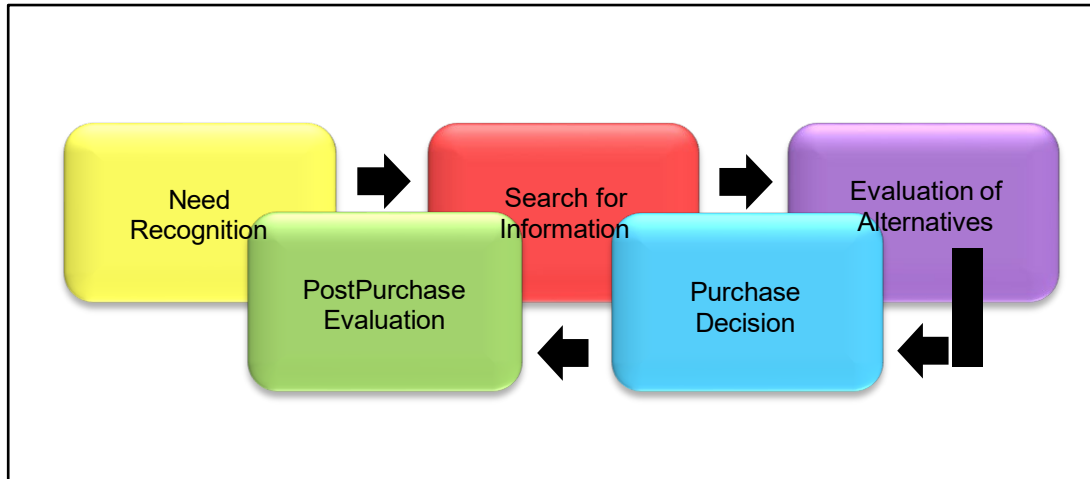


Figure 1 Consumer Purchasing Decision Process Model (John Dewey, 1910)

A favourable post purchase evaluation can support satisfaction, loyalty, and repeat purchasing. For product designers and marketers, the five stage process highlights the importance of aligning design decisions with users' recognised needs and the quality cues used during evaluation. Failure to do so can influence both product acceptance and organisational reputation.

2.4 Perceived Product Quality and Users' Purchase Intention

Prior literature consistently positions perceived product quality as an important antecedent of purchase related responses. Tsotsou (2006) linked perceived quality, consumer involvement, satisfaction, and purchase or repurchase intention. Chaudhuri (2002) and Ariffin et al. (2016) similarly identified perceived quality as an influential factor in customer satisfaction, while Kumar et al. (2009) characterised perceived quality as a cognitive response capable of shaping product purchase. Collectively, these studies suggest that stronger perceptions of quality are associated with stronger purchase intentions, although the magnitude and form of this relationship may depend on the product and consumption context.

Tsotsou (2006) further noted that perceived product quality has received comparatively limited attention when examined jointly with product involvement, consumer satisfaction, and purchase intention. Asshidin et al. (2016), in comparing local and imported products, showed that consumers emphasise quality when differentiating alternatives and that different levels of perceived quality may produce different purchase responses. These observations justify further investigation of how Malaysian users evaluate product quality and how those evaluations intersect with purchase related considerations.

2.5 Sustainable Product Design

Sustainable product design has become increasingly important because industrial products are expected to reduce environmental impacts while continuing to provide social and economic value. Sustainability therefore affects product planning, design, development, manufacturing, consumption, and the longer-term performance of products in the market. For designers and manufacturers, the challenge is to integrate sustainability without compromising the quality attributes that users consider important.

The Brundtland definition describes sustainable development as meeting present needs without compromising the ability of future generations to meet their own needs (Brundtland, 1987; Arowoshegbe & Emmanuel, 2016). Sustainability is also commonly represented through the triple bottom line of social, economic, and environmental dimensions (Gupta et al., 2015). Elkington (2018) described the triple bottom line as a framework for examining social, environmental, and economic

impact. Applied to product design, this perspective requires products to deliver their intended function while minimising environmental impact and generating appropriate economic and social benefits for stakeholders (Hacking & Guthrie, 2008; Hall, 2011; Ahmad et al., 2018).

Accordingly, sustainable product design requires environmental, social, and economic considerations to be integrated into design and development decisions rather than treated as separate downstream concerns. For example, packaging can be designed to facilitate recycling instead of disposal. The same principle applies to decisions concerning materials, energy efficiency, maintenance, durability, disassembly, and recovery. These considerations provide the sustainability context for the user centered product quality evaluation undertaken in this study.

3 METHODOLOGY

3.1 Research Design and Respondents

A quantitative survey design was employed to examine users' perceived product quality and purchase related considerations. The analysis comprised 150 end users surveyed at electrical and electronic kitchenware chain stores. Respondents represented the user group responsible for evaluating product quality while purchasing sustainable kitchenware products. The study was designed to generate descriptive evidence that could be compared across purchase factors and product evaluation criteria.

3.2 Instrument and Measures

The questionnaire contained two measurement components. The first examined respondents' electric kitchenware shopping background, preferences, and viewpoints before and during purchase. A five point Likert type scale ranging from "Definitely Not" to "Definitely Yes" was used to assess twelve factors that could influence the purchase of electric kitchenware. The second component evaluated product quality through the design evaluation criteria described below.

3.3 Product Stimulus and Quality Evaluation

The second component of the questionnaire focused on product quality evaluation. Respondents were asked to judge the quality or value of the product using the specified evaluation criteria. An electric rice cooker, shown in Figure 2, served as the product stimulus for this component of the study.



Figure 2 Electric Rice Cooker

3.4 Data Analysis

The electric rice cooker was selected because preliminary findings identified it as a frequently used kitchenware product in Malaysia and as a common item used in everyday domestic settings. Following data collection, the responses were entered into the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequencies, percentages, measures of central tendency, and standard deviation where applicable, were used to summarise the findings presented in the following section.

4 RESULTS

4.1 Electric Kitchenware Shopping Background

Figure 3 presents respondents' preferred places for purchasing electric kitchenware. Physical kitchenware stores were the most frequently preferred location (48.0%), followed by grocery stores (24.7%) and online websites (20.7%). Street bazaars recorded the lowest preference (6.7%). The distribution indicates that, within this sample, purchasing contexts that allow direct access to products remained more prominent than online or informal retail settings.

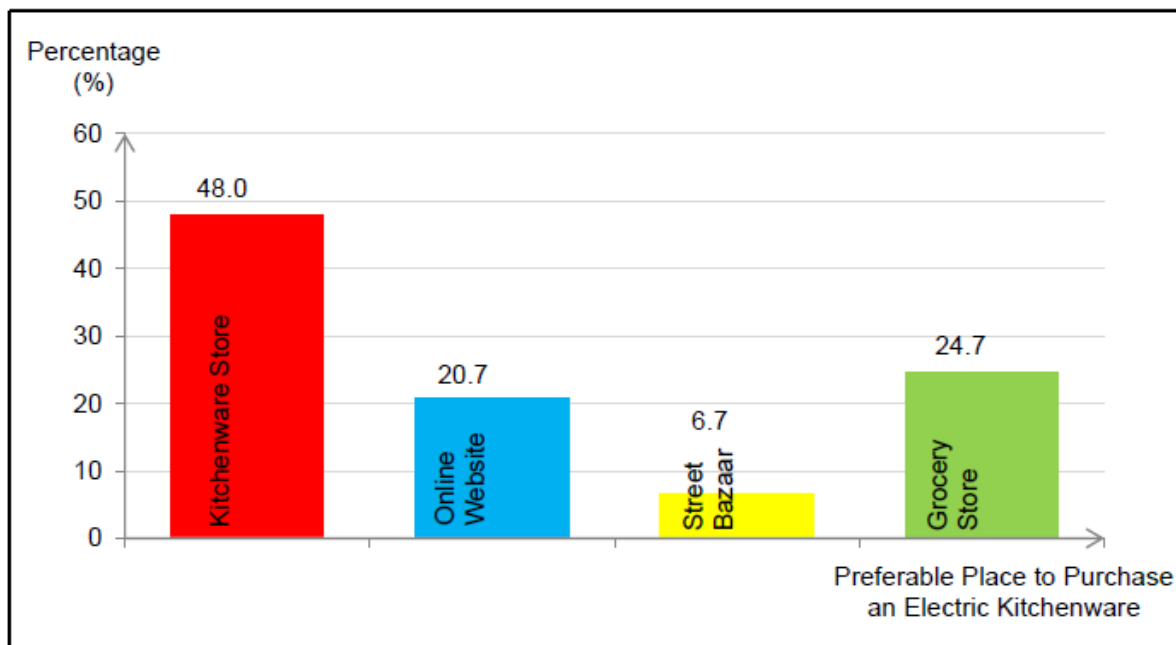


Figure 3 Preferable Place to Purchase an Electric Kitchenware

Figure 4 summarises the occasions on which respondents usually purchased electric kitchenware. Discount promotions recorded the highest proportion (49.3%), followed by replacement of old or damaged kitchenware (24.0%) and hobby or self reward purchases (16.0%). Festive seasons accounted for 6.7%, while moving into a new place recorded the lowest proportion (4.0%).

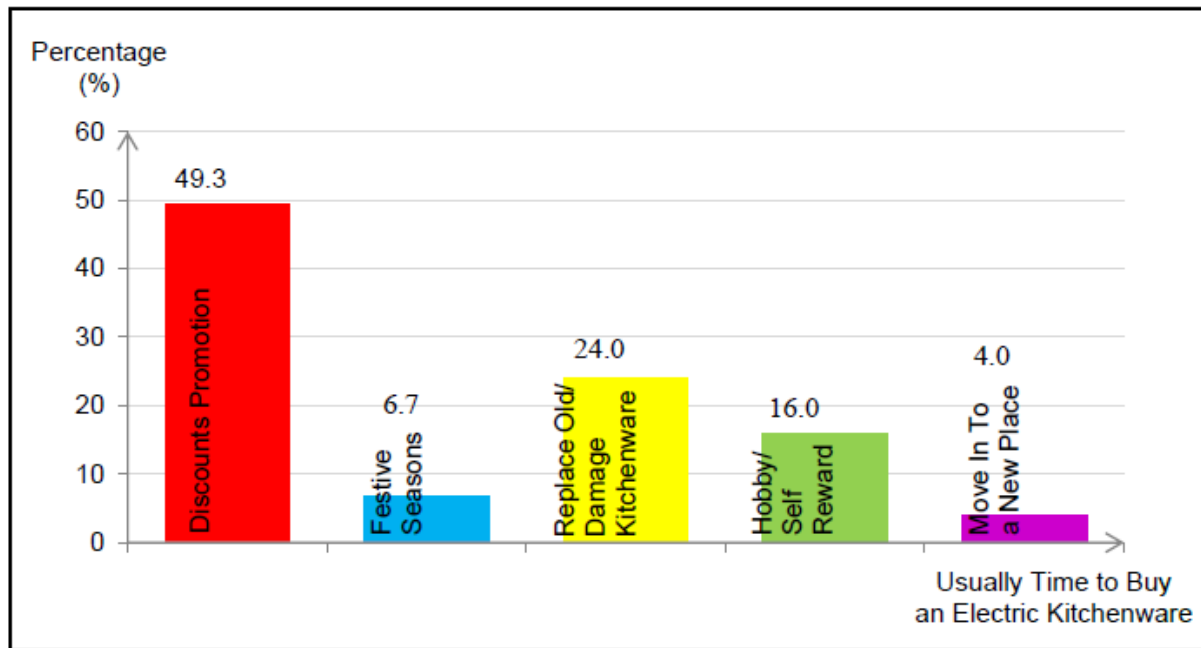


Figure 4 Usually Time to Buy an Electric Kitchenware

Table 1 compares twelve factors that respondents considered when purchasing electric kitchenware. Design recorded the highest mean ($M = 4.03$). Quick ordering and quality shared the second highest mean (both $M = 3.87$), followed by brand ($M = 3.63$), price ($M = 3.47$), free delivery and peer recommendations (both $M = 3.41$), customer service ($M = 3.35$), sustainability ($M = 3.31$), online reviews ($M = 3.26$), instinct ($M = 3.02$), and location ($M = 3.01$). These values identify design as the most highly rated factor in the set while preserving a relatively strong role for quality and purchasing convenience.

Table 1 Factors Influences User's, When User's Want to Buy Electric Kitchenware

Factor Influences User's, When User's Want to Buy an Electric Kitchenware	N	Min	Max	Mode	Median	Mean	Std. Deviation	Sum
Design	150	2	5	4	4.00	4.03	.718	605
Quick Ordering	150	2	5	4	4.00	3.87	.682	580
Instinct	150	2	5	3	3.00	3.02	.831	453
Location	150	2	5	3	3.00	3.01	.794	452
Free Delivery	150	2	5	4	3.00	3.41	.943	512
Brand	150	2	5	4	4.00	3.63	.823	545
Quality	150	2	5	4	4.00	3.87	.800	580
Online Reviews	150	2	5	4	3.00	3.26	.886	489
Price	150	2	5	4	4.00	3.47	.757	521
Sustainability	150	2	4	3	3.00	3.31	.634	496
Peer Recommendations	150	2	5	4	4.00	3.41	.706	511
Customer Service	150	2	5	3	3.00	3.35	.675	502

Table 2 provides the response distribution for design, the factor with the highest mean ($M = 4.03$). Of the 150 respondents, 3 respondents (2.0%) selected "Probably Not", 27 (18.0%) selected "Possibly", 82 (54.7%) selected "Very Probably", and 38 (25.3%) selected "Definitely Yes". Thus, 80.0% of respondents were represented by the two highest response categories ("Very Probably" and "Definitely Yes").

Table 2 Factors Influences User's The Most, When User's Want to Buy an Electric Kitchenware (Design)

Factors Influences User's The Most, When User's Want to Buy an Electric Kitchenware (Design)	Frequency (N)	Percent (%)	Cumulative Percent (%)
Probably Not	3	2.0	2.0
Possibly	27	18.0	20.0
Very Probably	82	54.7	74.7
Definitely Yes	38	25.3	100.0
Total	150	100.0	

Figure 5 shows the advertising channels reported as influencing respondents' decisions to purchase electric kitchenware. Social media recorded the highest proportion (20.6%), followed by television advertisements (16.7%), billboards (14.9%), cooking television programmes (12.9%), word of mouth (11.6%), sales brochures (10.9%), and shopping television programmes (8.9%). Magazines recorded the lowest proportion (3.5%).

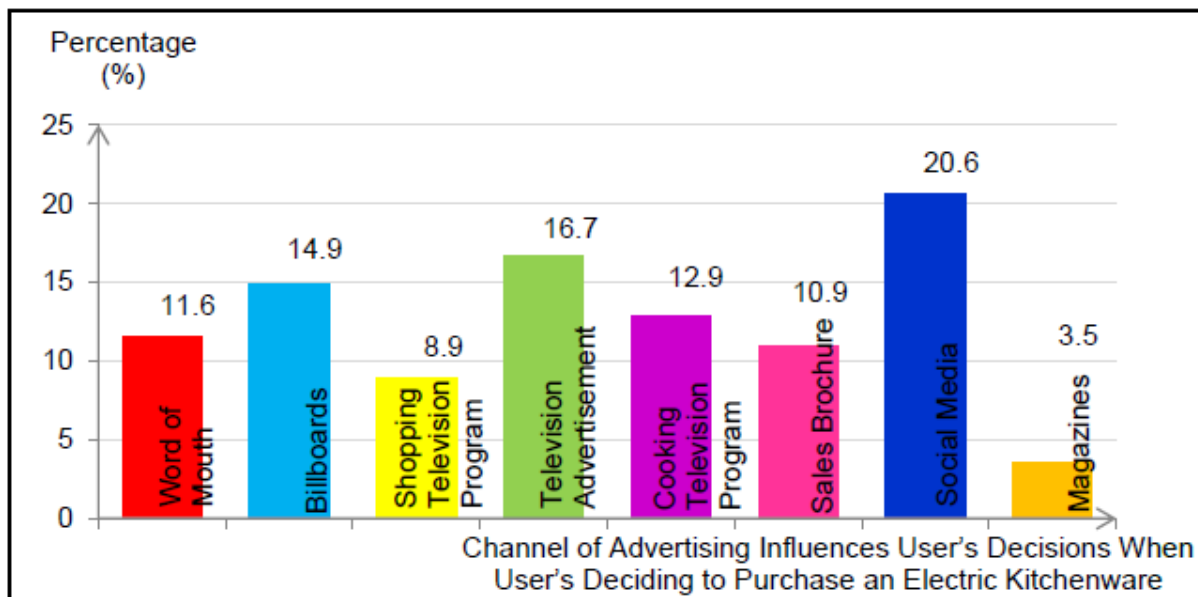
**Figure 5** Channel of Advertising Influences User's Decisions When User's Deciding to Purchase Electric Kitchenware

Figure 6 presents the distribution of respondents' favourite electric kitchenware brands in Malaysia. Philips recorded the highest proportion (11.3%), followed by Panasonic (10.0%), Sharp (8.3%), Elba (7.1%), Faber (6.3%), Khind (5.7%), and Electrolux (5.6%). Tefal, Pensonic, and Mille each recorded 4.4%, while Hitachi and Russell Taylors each recorded 4.3%. Toshiba accounted for 3.1%, Milux 2.7%, Bosch 2.6%, and Kenwood, De'Longhi, and Singer each 2.5%. The remaining brands were Midea (2.0%), National (1.7%), Zanussi (1.5%), Fotile (1.2%), Hisense (0.8%), and Ariston and Morgan (both 0.4%).

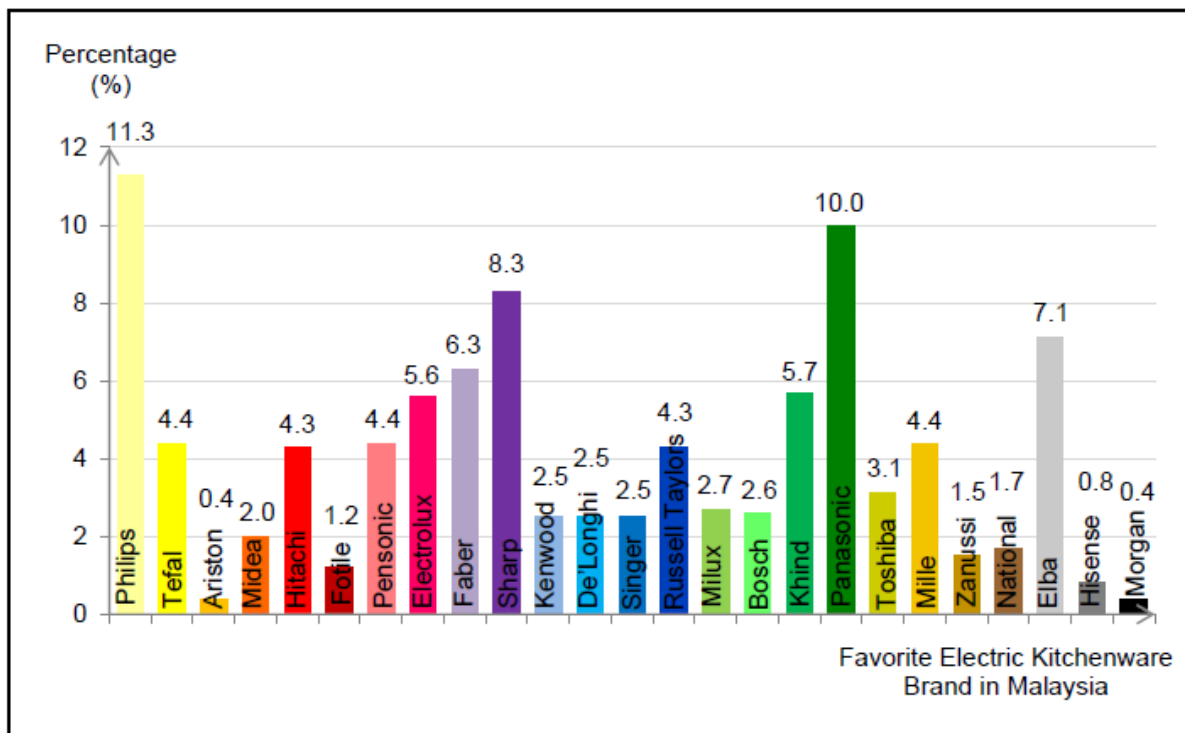


Figure 6: Favourite Electric Kitchenware Brand in Malaysia

4.2 Evaluation of Product Quality

Figure 7 identifies the stage at which respondents evaluated the quality of their electric kitchenware. Most respondents reported evaluating quality after using the product (62.7%). Smaller proportions evaluated quality before purchase (15.3%), at the point of using the product (12.7%), at the point of purchase (5.3%), and before using the product (4.0%).

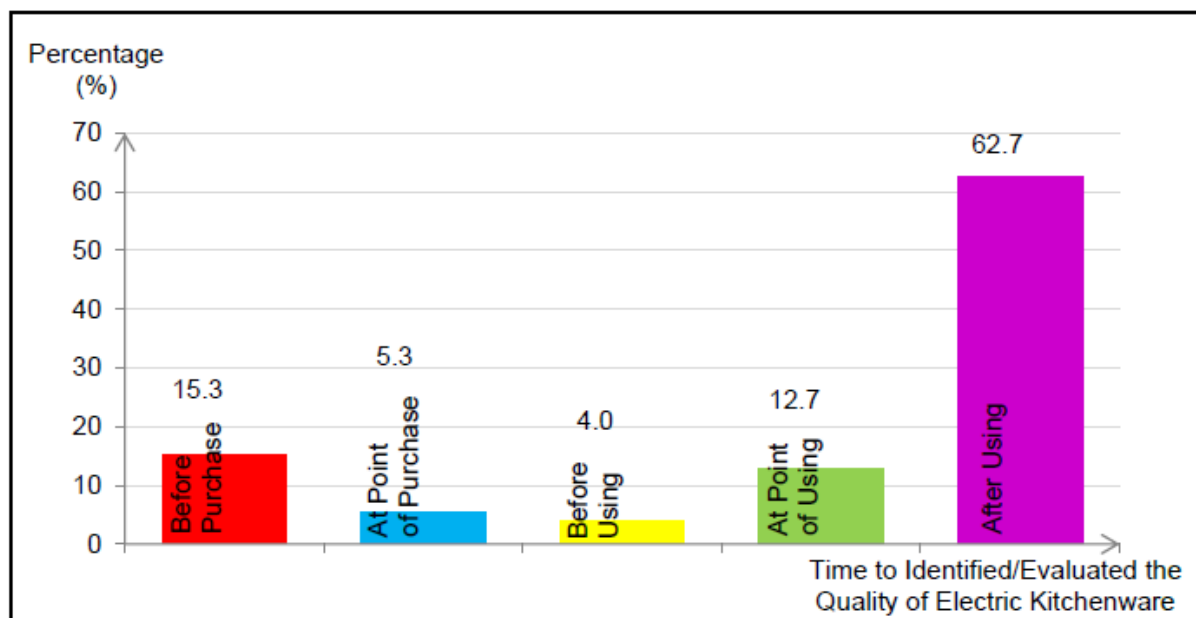


Figure 7: Time to Identified/Evaluated the Quality of Electric Kitchenware

Figure 8 reports respondents' views on factors contributing to good product design. Quality recorded the highest proportion (52.0%), followed by free trials and discounts (22.7%), competitive pricing (15.3%), good value-added services (7.3%), and communication strategies (2.7%). The result places

product quality clearly above the other considerations listed in this item.

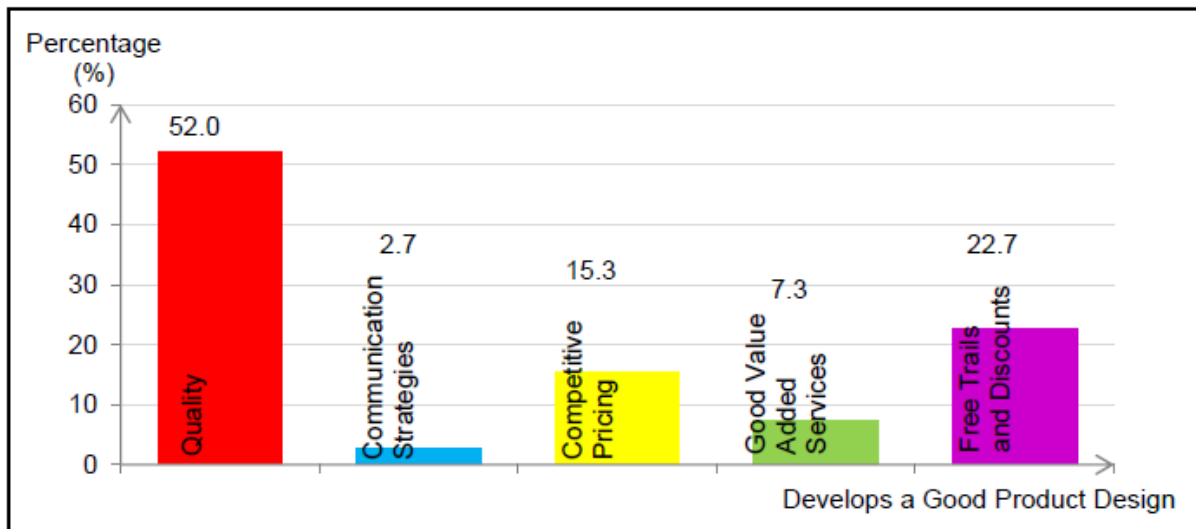


Figure 8: Develops a Good Product Design

Figure 9 shows which stakeholder respondents believe should determine or define product quality. Users recorded the highest proportion (74.0%), followed by researchers (14.7%) and the design industry (11.3%). This distribution indicates a strong preference for user centered input when defining product quality.

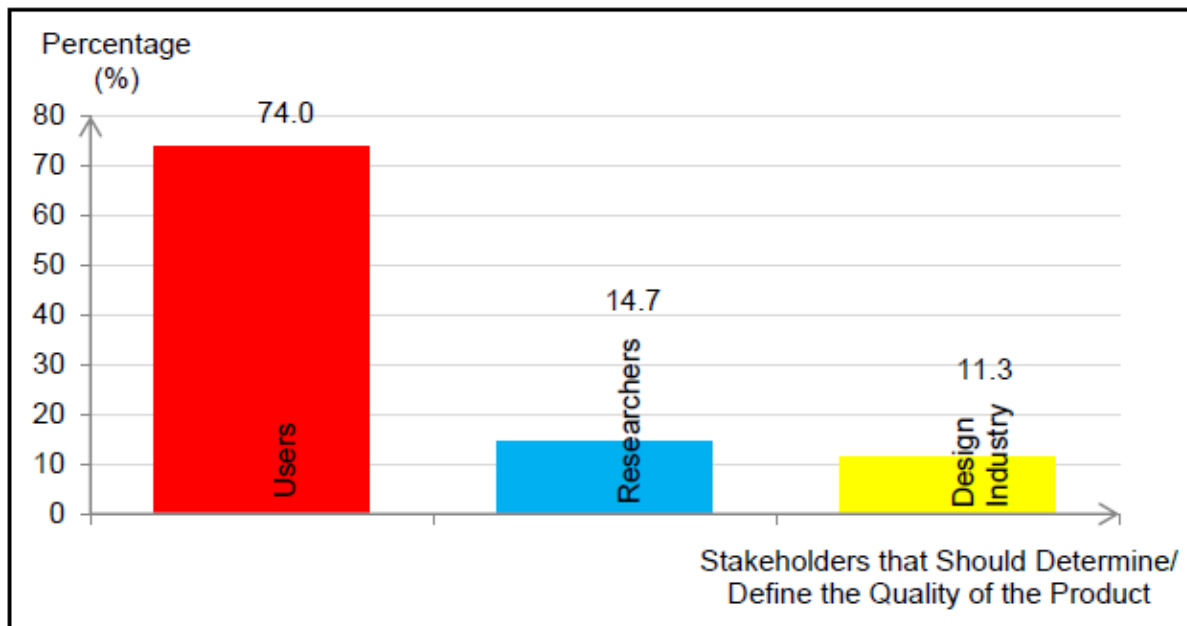


Figure 9: Stakeholders that Should Determine/Define the Quality of the Product

Figure 10 presents the most important form related considerations for purchasing the electric rice cooker. Shape recorded the highest proportion (25.7%), followed by appearance (23.0%), colour (20.6%), product finishing (19.7%), and texture (11.0%).

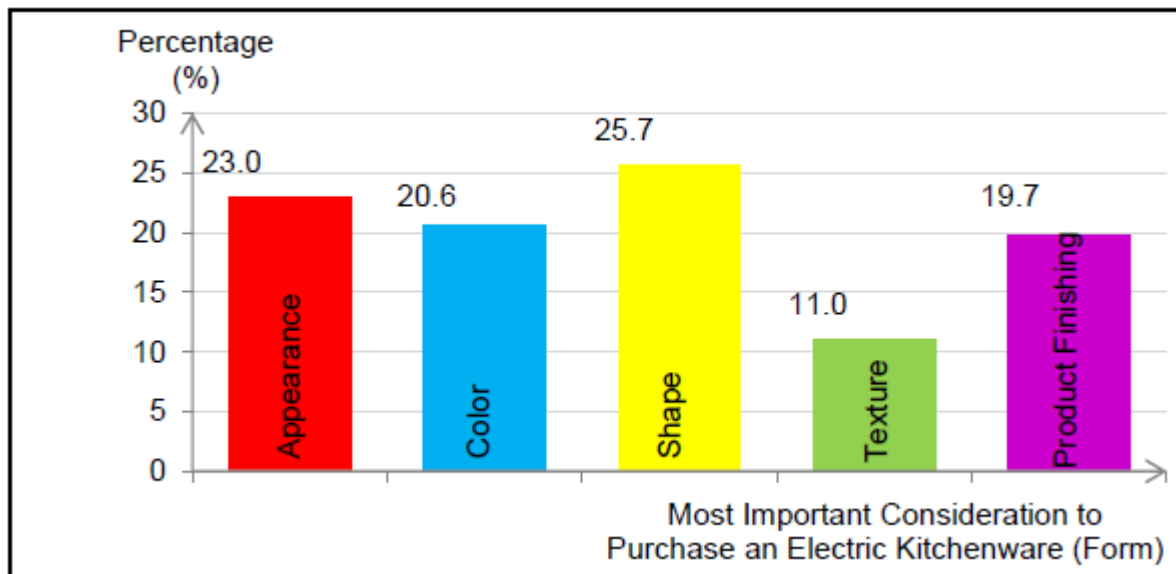


Figure 10: Most Important Consideration to Purchase an Electric Kitchenware (Form)

Figure 11 presents the function related considerations. “Easy to understand” recorded the highest proportion (23.0%), followed by ergonomic considerations (22.0%), comfort (19.0%), product performance (18.3%), and convenience/ease of use/user friendliness (17.7%).

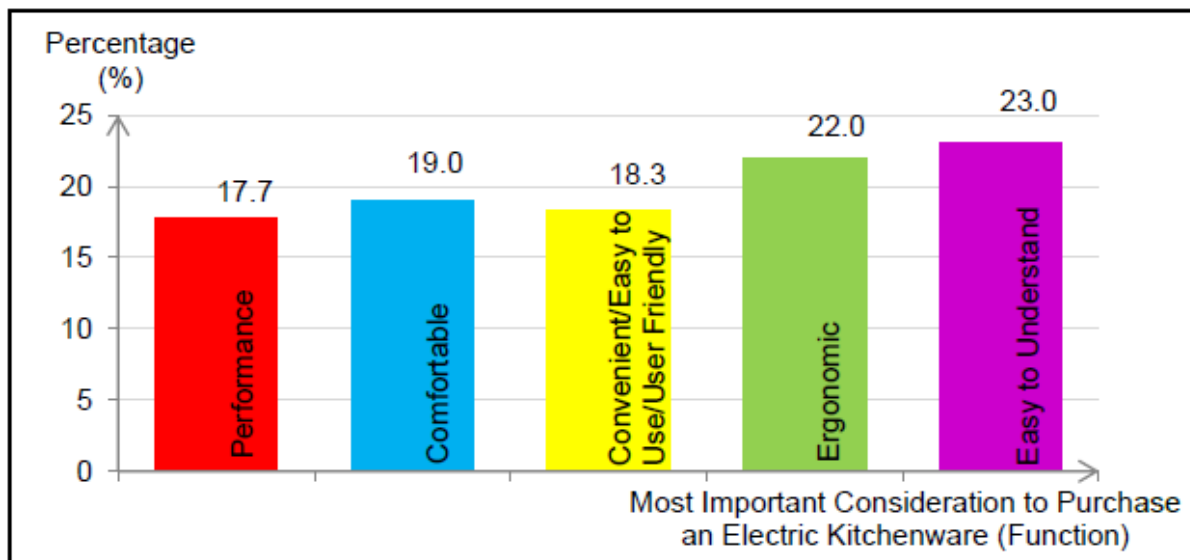


Figure 11: Most Important Consideration to Purchase an Electric Kitchenware (Function)

Figure 12 summarizes safety related considerations. Spare part availability recorded the highest proportion (30.0%), followed by test results (25.7%), warranty provisions (18.7%), maintenance (16.3%), and compliance with standards and regulations (9.3%).

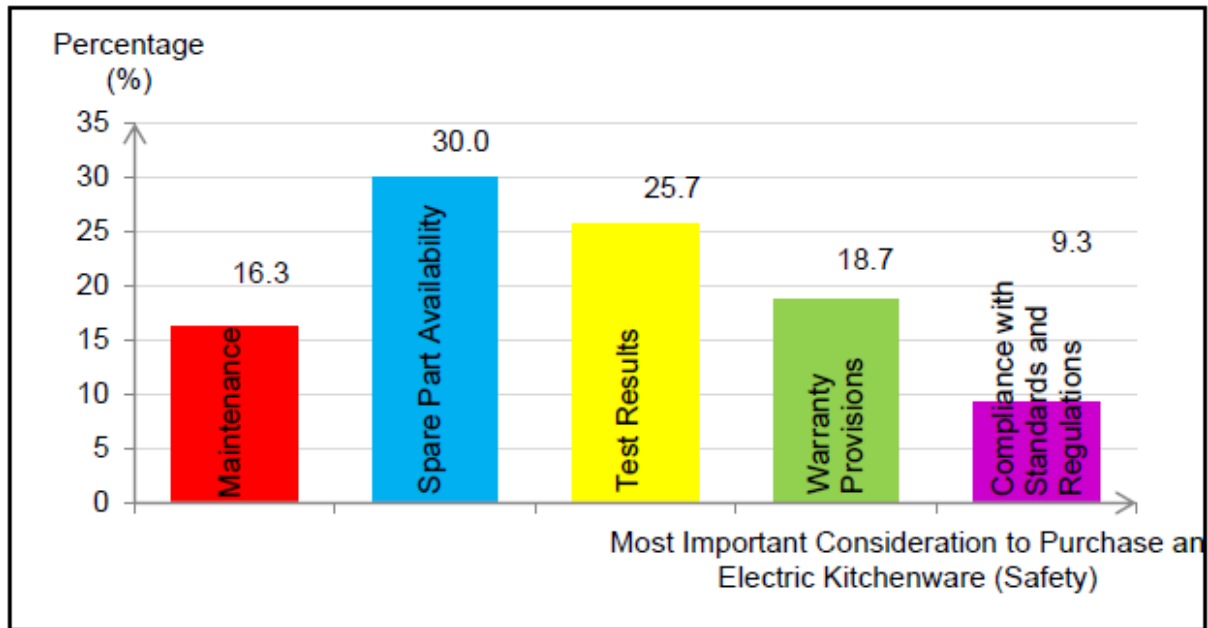


Figure 12: Most Important Consideration to Purchase an Electric Kitchenware (Safety)

Figure 13 reports sustainability related considerations. Stability recorded the highest proportion (27.3%), followed by material use/type (21.7%), energy efficiency (18.3%), assembly and disassembly (16.7%), and recyclability (16.0%).

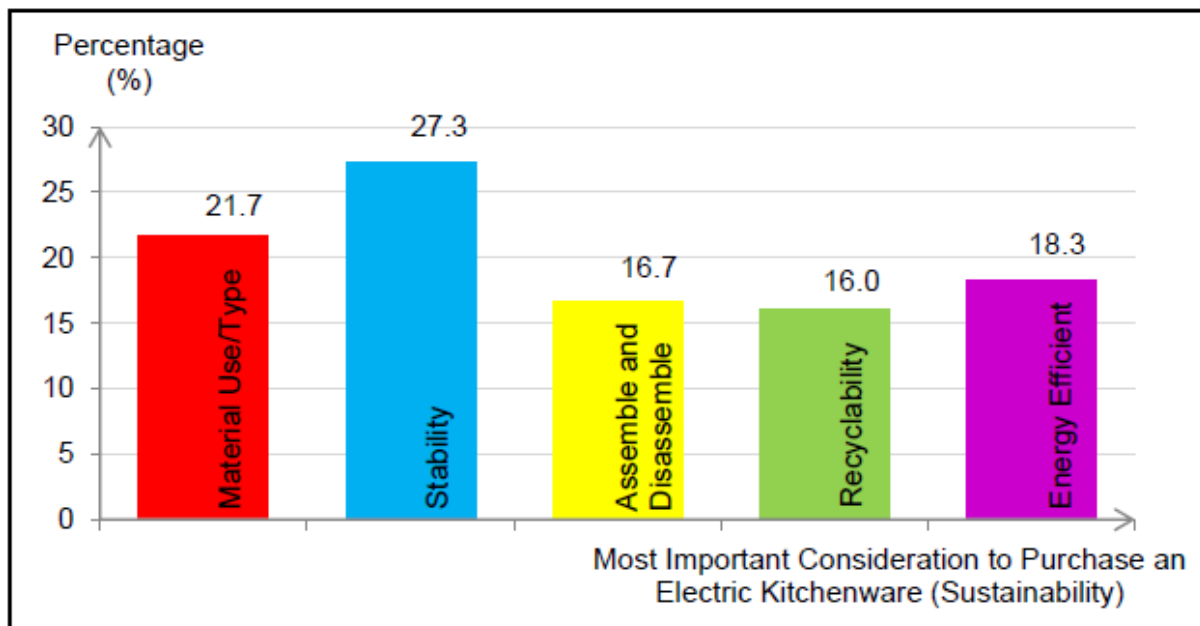


Figure 13: Most Important Consideration to Purchase Electric Kitchenware (Sustainability)

Figure 14 presents quality related considerations. Reliability recorded the highest proportion (24.7%), followed by durability (22.0%), product specifications (21.0%), material selection (18.3%), and conformance (14.0%).

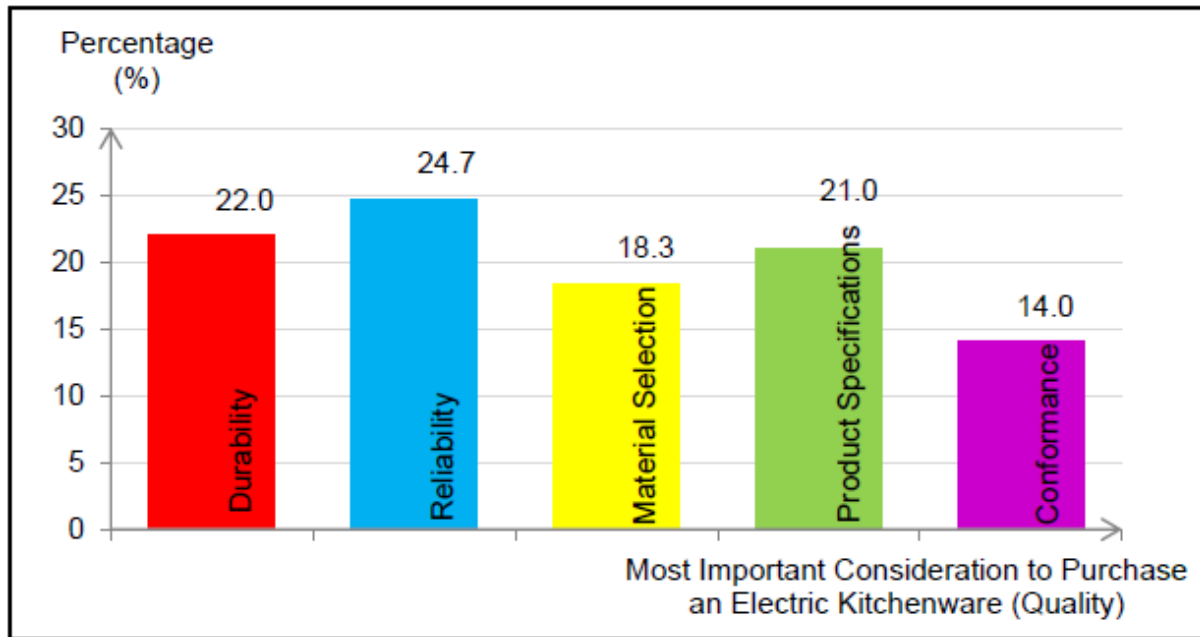


Figure 14: Most Important Consideration to Purchase an Electric Kitchenware (Quality)

Figure 15 presents commerciality related considerations. Brand recorded the highest proportion (20.9%), followed by recommendation (16.9%), price (14.4%), product information (14.2%), customer review (13.6%), service after purchase (11.1%), and online reviews (8.9%).

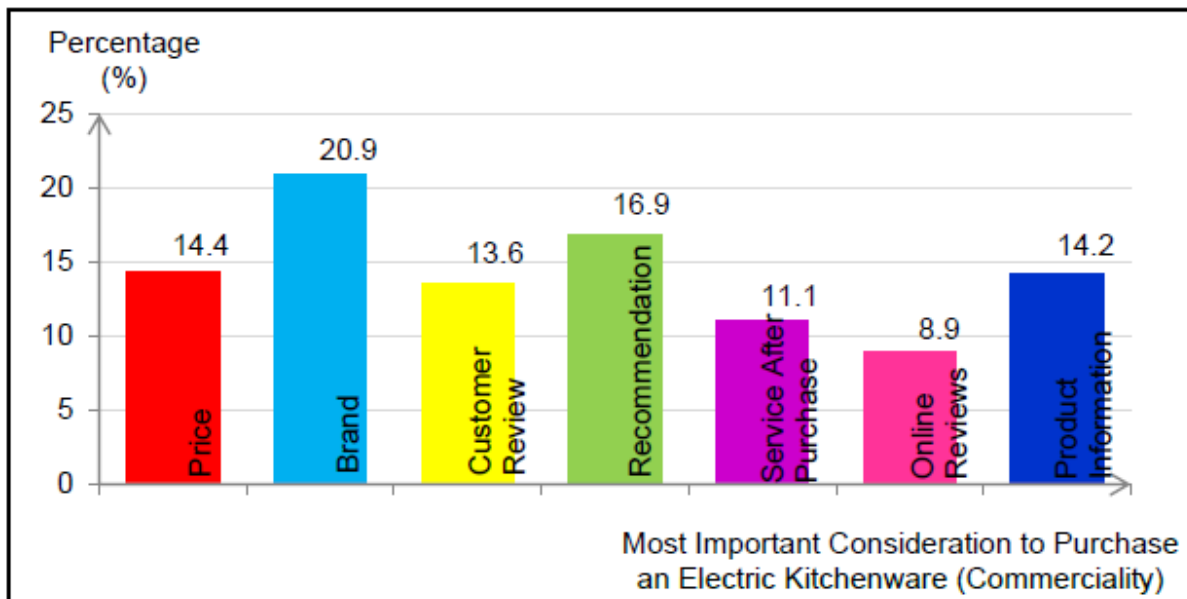


Figure 15: Most Important Consideration to Purchase Electric Kitchenware (Commerciality)

Figure 16 presents innovation related considerations. Product benefit recorded the highest proportion (32.3%), followed by uniqueness (26.0%), prestige value (20.3%), exclusiveness/limited availability (14.0%), and novelty/originality (7.4%).

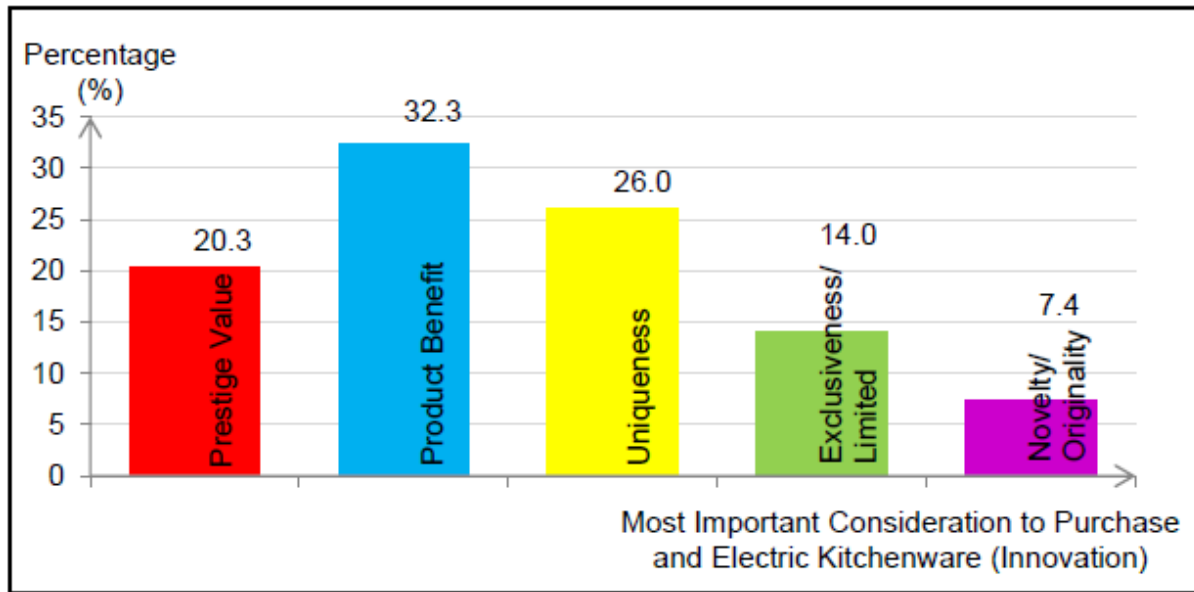


Figure 16: Most Important Consideration to Purchase Electric Kitchenware (Innovation)

5 DISCUSSION

5.1 Electric Kitchenware Shopping Behaviour and Purchase Considerations

The descriptive findings show that perceived quality operates within a broader set of purchase considerations rather than as an isolated judgement. The study does not provide an inferential test of causality; therefore, the results are interpreted as patterns of preference and evaluation within the 150respondent sample. Nevertheless, the prominence of design ($M = 4.03$), quality ($M = 3.87$), and user centered quality evaluation is consistent with the literature reviewed earlier, which associates perceived product quality with consumer satisfaction and purchase related responses (Tsotsou, 2006; Saleem et al., 2015; Muhammad Firdaus et al., 2020).

The preference for physical kitchenware stores (48.0%) suggests that direct product interaction remains important in this category. A physical retail setting enables users to see, touch, compare, and experience products before purchase, which can strengthen the formation of perceived quality judgements. Discount promotions were also the most frequently reported purchase occasion (49.3%), indicating that promotional value can trigger or accelerate purchase decisions. At the same time, design received the highest mean among the twelve purchase factors, reinforcing the importance of visual and product form cues in consumers' early evaluation of electric kitchenware.

Social media was the most frequently reported advertising influence (20.6%), demonstrating the relevance of digitally mediated product exposure within the purchase process. The brand preference results were comparatively dispersed across 25 brands, although Philips recorded the largest individual share at 11.3%. Rather than indicating market dominance, this result should be interpreted as the leading preference within the present sample. The finding is compatible with the broader role of brand meaning and perceived quality discussed in the literature, including the relationship between perceived quality, brand associations, and product reputation (Aaker & Joachimsthaler, 2000; Specchia, 2018).

5.2 Product Quality Evaluation and Sustainable Product Design Model

The product quality evaluation highlights the central role assigned to users. A total of 74.0% of respondents indicated that users should determine or define product quality, and 62.7% reported evaluating the quality of electric kitchenware after use. These findings support a user centered interpretation of quality: designers and manufacturers need to understand not only technical specifications but also the experience through which users assess whether a product satisfies expectations. In addition, 52.0% of respondents selected quality as the leading factor in developing good product design. Taken together, these results position users' post use evaluation as a valuable source of information for identifying product strengths, weaknesses, reliability concerns, and opportunities for improvement.

The electric rice cooker was used as the product stimulus for evaluating the criteria associated with sustainable kitchenware. Building on Shaharudin (2013), the study organised the evaluation through seven elements of the Design Evaluation System (DES): form, function, safety, sustainability, quality, commerciality, and innovation. The empirical results within each element were then ranked according to respondents' reported priorities. This structure provides the basis for synthesising the findings into the Sustainable Product Design Model shown in Figure 17.

Figure 17 integrates three layers of decision support: users' perceived product quality, purchase intention, and the seven design evaluation elements, positioned within the social, environmental, and economic dimensions of sustainability. The colour progression in the model represents relative priority, moving from higher to lower user consideration. The model proposes that sustainability should be incorporated during the early stages of product planning and development because design decisions made across the product life cycle can influence sustainability performance. Importantly, the model should be interpreted as a descriptive synthesis of the priorities identified in this study rather than as a statistically validated causal model.

Within the seven evaluation elements, the highest ranked criteria were shape for form (25.7%), easy to understand for function (23.0%), spare part availability for safety (30.0%), stability for sustainability (27.3%), reliability for quality (24.7%), brand for commerciality (20.9%), and product benefit for innovation (32.3%). These priorities indicate that users evaluate sustainable kitchenware through a combination of visible form, comprehensible use, serviceability and safety, stable and resource conscious performance, dependable quality, market confidence, and meaningful product benefit. The lower ranked criteria remain part of the model and should not be interpreted as unimportant; rather, they represent lower relative priorities within the response distributions obtained in this study.

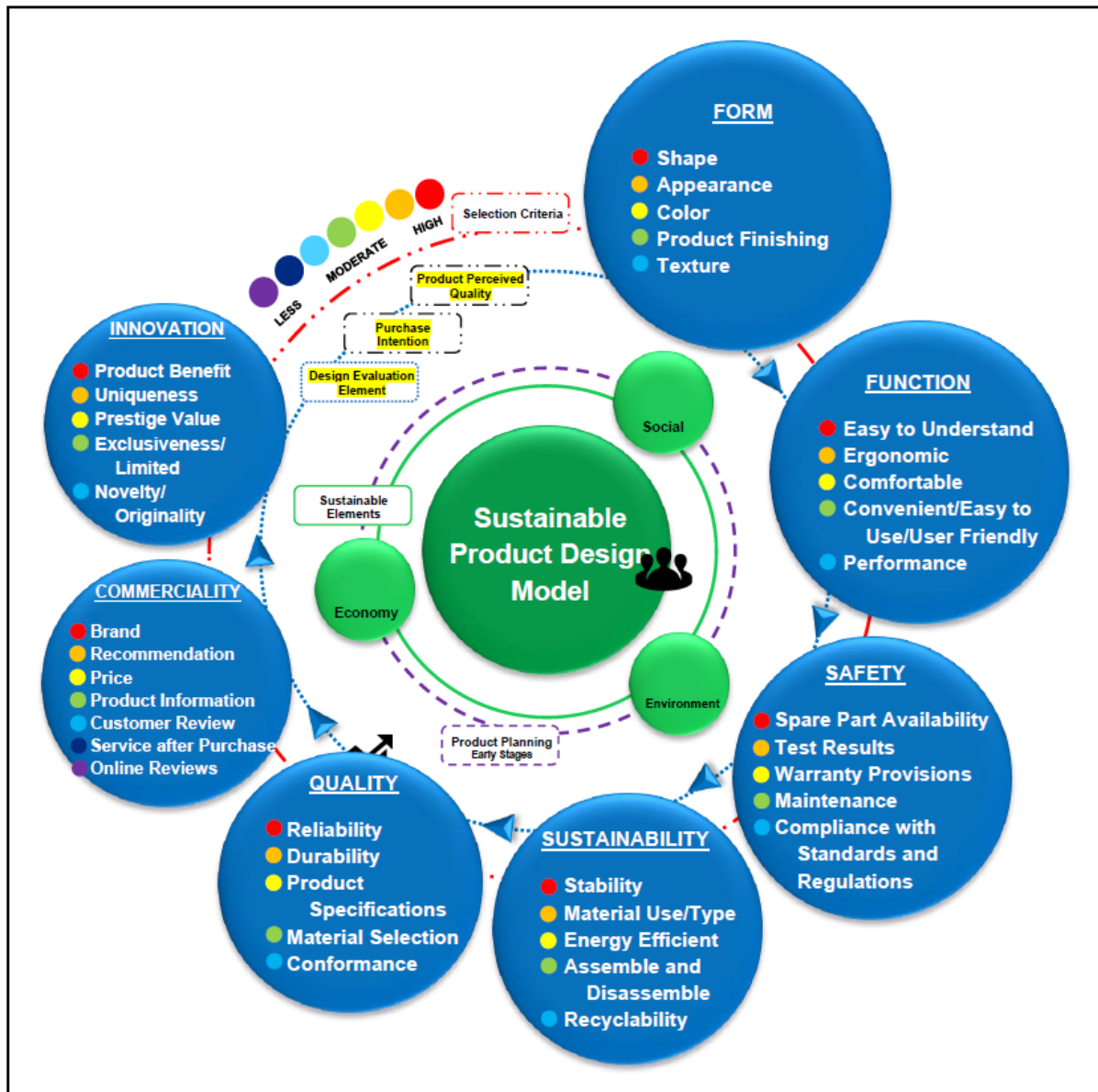


Figure 17: Sustainable Product Design Model

The sustainability dimension of the model further connects users' product evaluations with the social, environmental, and economic pillars discussed in the literature. Within sustainability specific criteria, stability ranked first (27.3%), followed by material use/type (21.7%), energy efficiency (18.3%), assembly and disassembly (16.7%), and recyclability (16.0%). Within quality, reliability ranked first (24.7%), followed by durability (22.0%), product specifications (21.0%), material selection (18.3%), and conformance (14.0%). Commerciality was led by brand (20.9%), whereas innovation was led by product benefit (32.3%). The pattern shows that users' evaluation of sustainable product quality extends beyond environmental attributes alone and includes functional confidence, maintainability, market related cues, and perceived benefit.

5.3 Design and Managerial Implications

For product designers and manufacturers, the Sustainable Product Design Model can be used as a structured reference during early product development decisions. It enables design teams to consider the relative priorities identified by users while simultaneously reviewing social, environmental, and economic sustainability. For example, when two products provide comparable basic functions, decisions concerning energy efficiency, durability, material selection, serviceability, and user perceived benefit may differentiate the alternatives. The model therefore offers a practical basis for reducing conflicts between design objectives and for aligning product development decisions with both user expectations and sustainability considerations.

5.4 Limitations and Future Research

The findings should be interpreted within the boundaries of the study design. The analysis is descriptive, uses a sample of 150 end users surveyed in electrical and electronic kitchenware chain store contexts, and employs a single electric rice cooker as the product stimulus for detailed evaluation. Consequently, the results should not be generalised automatically to all Malaysian consumers, retail settings, or product categories. Future research could examine a broader range of sustainable products, include more diverse respondent groups and purchasing contexts, and apply inferential or multivariate analysis to test the relationships among perceived product quality, purchase intention, and the proposed design evaluation dimensions. Such work would provide a stronger basis for validating and refining the Sustainable Product Design Model.

6 CONCLUSION

This study examined users' perceived product quality and purchase related considerations for sustainable electric kitchenware products. The findings show that physical kitchenware stores remained the most preferred purchase location (48.0%), discount promotions were the most frequently reported purchase occasion (49.3%), and design recorded the highest mean among the twelve purchase factors ($M = 4.03$). Users were also identified as the principal stakeholder for defining product quality (74.0%), while quality was the most frequently selected factor for developing good product design (52.0%). Across the seven design evaluation elements, the highest ranked criteria were shape, easy to understand, spare part availability, stability, reliability, brand, and product benefit. These findings were integrated into a Sustainable Product Design Model that connects perceived quality and purchase intention with form, function, safety, sustainability, quality, commerciality, and innovation within the social, environmental, and economic dimensions of sustainability. The model provides a user centered reference for product designers and manufacturers seeking to incorporate perceived quality and sustainability into early product development decisions.

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All authors played equal contributions towards the production of this paper.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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