Exploring the Impact of Persuasive Features on Customer Satisfaction Levels of E-Commerce Websites Based on the Kano Model

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Abstract. This study investigated user needs and expectations in relation to the 28 persuasive features of the Persuasive Systems Design model. It adopted the Kano's model of customer needs and expectations to examine perceive user satisfaction or dissatisfaction levels of the various system features on e-commerce websites. The findings provide guidelines for designing e-commerce platforms and websites that seek to employ persuasive strategies to enhance user experience. It was observed that persuasive system features do not consistently affect user satisfaction and dissatisfaction levels. Features relating to dialogue support had the highest influence on user satisfaction levels; followed respectively by credibility support and primary task support. Social support features do not have a high influence on user satisfaction. No persuasive system feature emerged as a "must-be" feature.

Keywords: Persuasive system features · User satisfaction · Interactive e-commerce design · Kano model

1 Introduction

Research has demonstrated that although usability plays a key role in the success of e-commerce websites, it is not the main factor for success [1]. A successful e-commerce website needs to attract users, emphasize credibility to stimulate trust, enhance customer interactions, present products and services in an inspirational and attractive manner, and persuade customers (via application of persuasive features) to purchase from the website [2]. It must ultimately result in an experience that produces 'customer satisfaction'. As the argument on which factors are more relevant on e-commerce websites and its related ethical considerations continue to progress [3, 4], this study focuses its investigation on persuasive features that influences user satisfaction on e-commerce websites. Although persuasive features play a major role in e-commerce platforms [5], they have not been adequately explored [6]. In particular, the ability to select effective persuasive features to enhance persuasive experience remains unsolved.

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Persuasive features trigger activities that promote continuous interactions on websites [7] and motivate consumers to use services or buy products from e-commerce websites [8, 9]. It has been argued that e-commerce websites need to exhibit persuasive functionalities in addition to providing information on product and services [2]. Although influence strategies have always been part of commercial activities and thus the need to incorporate them on e-commerce websites is not novel, the introduction of persuasive technologies, and behavior change support systems, presents an opportunity to e-commerce designers to enrich e-commerce websites. Persuasive systems design is the use of technological artefacts and features to influence user cognition to a predetermined one [10, 11]. Existing research has demonstrated that persuasive systems have been effective in areas such as health, education, environmental issues, and energy conservation; yet studies that focus on the use of persuasive features in e-commerce is lacking. In particular, the contextual value of specific types of persuasive features has not been adequately explored. Limited studies have examined or evaluated the persuasive power of website features and components in e-commerce [12]. However, this is vital, considering that e-commerce websites must influence customers in addition to providing brochures and catalogues of products and services. E-commerce website users may perceive satisfaction based on their interactions and experiences of the websites they use. Studies have shown that user satisfaction and persuasion are strongly correlated [13]. Accordingly, it is imperative to investigate persuasive features that promote customer satisfaction on e-commerce websites [14].

This study, therefore, seeks to examine how different persuasive features of e-commerce websites influence customers' satisfaction levels. Specifically, the perception of users concerning the 28 persuasive system features, proposed by Oinas-Kukkonen and Harjumaa [15], was assessed using Kano's model [16] to determine how customers classify them in terms of relevance. The findings of this study provide relevant information for further investigations on methods for selecting the most effective persuasive features: an issue which is challenging to persuasive systems designers.

2 Related Literature

2.1 Customer Satisfaction

It is almost impossible to initiate and establish long-term relationships with customers if their needs and expectations are not fully understood or met [17]. A good understanding of customers' needs and expectation is a necessary step to fulfil their satisfaction [18]. In interactive e-commerce websites, customer satisfaction is relevant [19] and thus several organizations use customer satisfaction ratings as a key indicator of performance [20]. Customer satisfaction is the assessment of the perceived difference between prior expectations and the actual performance of the product or service [21], and is an indicator of positive fulfilment of customer needs. Some researchers argue that customer needs and satisfaction are the ultimate objectives of every organization [22]. Accordingly, the need to meet their expectations cannot be overemphasized, particularly considering that these needs evolve over time [16]. In contemporary interactive e-commerce websites, customer satisfaction is considered as a key ingredient of success [19]. Thus, several

theories, models, and frameworks have been proposed to extend knowledge and provide guidelines on how customer satisfaction can be achieved. Perhaps one of the most dominant theories applied in customer satisfaction research is Herzberg's motivation-hygiene theory (i.e. the two-factor theory) [23]. The theory distinguishes concepts of satisfaction and dissatisfaction as two distinct constructs. This notion is contrary to arguments made by Zhan and Dran [8] that considers satisfaction as distinct values of one dimension. Herzberg [24] argued that motivation and hygiene factors play an essential role in customer satisfaction. Even though these factors continue to remain relevant in contemporary investigations of customer satisfaction research, treating satisfaction and dissatisfaction as mutually exclusive constructs is problematic.

Due to the limitation of Herzberg's motivation-hygiene theory, some studies adopt SERVQUAL [25] for investigating satisfaction. SERVQUAL is a multi-item scale for measuring five main dimensions (i.e., Tangibles, Reliability, Responsiveness, Assurance and Empathy) of customer needs and perceptions on quality performance. SERVQUAL seeks to measure service quality, nonetheless, it has been adopted for accessing customer satisfaction in several studies: with the assumption that there is a relationship between service quality and customer satisfaction [26]. However, its use for measuring customer satisfaction is contentious, since arguments on the relationship between service quality and customer satisfaction are diverging [27–29]. It has been argued that the relationship between service quality and customer satisfaction is non-linear [16]. So, SERVQUAL is not suitable for assessing customer satisfaction, although it is useful for measuring service quality. The Kano's model [16] on the other hand addresses the limitations of SERVQUAL. The model categorizes service quality features based on their effects on customer satisfaction that support a business's strategic and tactical decisions [30]. This is a key step as it measures customers' perception of service quality features and categories them based on their influences on customer satisfaction. In this study, the Kano's model is used to measure customer satisfaction since it provides the relevant variables needed for the study.

2.2 Kano's Model of Customer Satisfaction

The Kano model distinguishes between four forms of customer expectations for product and service quality. This includes i) must-be features, ii) one-dimensional features, iii) attractive features and iv) indifferent features. The model has been applied in many fields, including service quality assessment [19], user experience assessment [8], and compensation systems [31]. It argues that for businesses to excel, the first three forms must be met. However, although the presence of "must-be" features is not noticeable by customers, their absence or non-performance leads to total dissatisfaction. One-dimensional features (i.e. performance or linear quality) are specific needs that are noticeable by customers when present. Hence, the presence of one-dimensional features is always noted, and the absence of one-dimensional features leads to customers dissatisfaction. Attractive or excitement features are attributes that are not expected by customers, yet their presence will delight them and inspire loyalty. Attractive features increase satisfaction levels, but their absence does not affect dissatisfaction. This is because attractive features seek to address hidden and unarticulated needs and it is mostly a challenge to identify them. Indifferent features do not influence customer satisfaction or dissatisfaction level

and thus, they do not have an impact on customer satisfaction. The model provides a logical extension of Herzberg's motivation-hygiene theory [24] where Must-be features are similar to hygiene features, Attractive features maps to motivational features and One-dimensional features maps to bivalent features.

The KANO model: facilitates the identification of quality expectations and time transition of these quality factors [8]; is versatile, and has been adapted for a range of different purposes [32]; puts customer satisfaction first in design features of products and services; and has been successfully applied to assess attributes of website quality [8]. As such the KANO model is appropriate for assessing persuasive system features, i.e. to categorize features based on the influence of features on customer satisfaction, in order to provide a better understanding of customer requirement priority, and address the nature of changing quality features.

2.3 Persuasive Systems Features and E-Commerce Websites

Persuasion is a communication process involving an individual (persuader) sending a message to a recipient (persuadee), intending to influence the recipient's attitude and/or behavior; whilst leaving the recipient with the power of decision. Although this activity is not new, advancement in computer technology has enhanced its ease of application. Increasingly, systems and technologies are designed with the sole intention of altering cognition. Accordingly, new theories and frameworks [10, 14, 26, 27] have been proposed to facilitate the use of technological artefacts for influencing target user behavior. The Persuasive Systems Design model [15] is arguably the most used framework for designing and evaluating persuasive systems and has been used to assess persuasive experiences in several domains including enterprise resource management systems [36], alcohol and smoking management systems [37], and knowledge sharing among academics [38]. The Persuasive Systems Design model highlights seven postulates for analyzing and designing persuasive systems. It further argues that there are twenty-eight (28) persuasive features that can be categorized into four main areas: primary tasks (Reduction, Tunneling, Tailoring, Personalization, Self-Monitoring, Simulations, Rehearsal); dialogue support (Praise, Rewards, Reminders, Suggestion, Similarity, Liking, Social Role); Credibility support (Trustworthiness, Expertise, Surface credibility, Real-world feel, Authority, Third-party endorsements, Verifiability) and Social support (Social Learning, Social Comparison, Normative Influence, Social facilitation, Cooperation, Competition, Recognition (see [15] for a more detailed definition of each feature). These features have been used in a range of different domains to encourage certain target behavor. Some studies have argued that they influence users' purchase intentions [39] by providing good navigational usability, eliminate trust and security doubts, and promote smooth transactions.

3 Research Approach

An exploratory study was designed to investigate user preferences of persuasive features, i.e., how each persuasive feature influences user satisfaction levels with regard to e-commerce. A questionnaire was used to identify and classify customer perception into

four categories as suggested by Kano et al. [16]. The functional or dysfunctional form of each of the 28 persuasive features was measured. As suggested by Xu et al. [40], the functional form was specified as 'how would you feel if this particular feature is presented in a product/service'. The dysfunctional form was specified as 'how would you feel if this particular feature is not presented in the product/service'. It is expected that Kano's model will classify persuasive features based on their impact on user satisfaction. Based on responses to the functional and dysfunctional forms of each question, customers' requirements for each feature were classified into different categories using the Kano Evaluation (see Table 2). The frequency distribution for each feature determined Kano's category classification [19]: with the highest response frequency being the dominant class. However, in situations where the dominant class is absent or sensitive to change in frequency, two additional measures are used to determine it (i.e. category strength and total strength) [41]. The quality response is measured by calculating the Satisfaction Coefficient (*CoS*) and the Dissatisfaction Coefficient (*CoD*) - as shown respectively in Eqs. 1 and 2; where A is Attractive, O is One-dimensional, M is Must-be and I is Indifferent (Table 1).

$$\mathrm{CoS} = \frac{(\mathrm{A} + \mathrm{O})}{\mathrm{A} + \mathrm{O} + \mathrm{M} + \mathrm{I}} \tag{1}$$

and

$$\mathrm{CoD} = \left(\frac{(\mathrm{M} + \mathrm{O})}{\mathrm{A} + \mathrm{O} + \mathrm{M} + \mathrm{I}}\right) \times (-1) \tag{2}$$

Table 1. Kano's evaluation framework

Customer requirements		Dysfunctional (negative) question				
		1	2	3	4	5
Functional (positive) question	1	Q	A	A	A	O
	2	R	I	I	I	M
	3	R	I	I	I	M
	4	R	I	I	I	M
	5	R	R	R	R	Q

***A**: Attractive, **O**: One-dimensional, **M**:Must-be, **I**: Indifferent, **R**: Reversal, **Q**: Questionable*
***1**:I like it, **2**:I expect it, **3**:I'm neutral, **4**:I can tolerate it, **5**:I dislike it*

Two independent samples were used for evaluating the same set of persuasive features in relation to physical and digital products. The separation of the product sought to reduce the length of the questionnaire and multiple evaluations. A pre-test was conducted using 6 participants and their recommendations were considered in the final version of the questionnaire. The CVSCALE was used and the pre-test results showed high internal reliability, with Cronbach's α values above the 0.7.

The questionnaire (see https://www.dropbox.com/s/dthnyjnviagpn0u/Questionaire.pdf?dl=0) was administered online using 'SmartSurvey.com'. The survey link was sent through different media channels, including Facebook, Twitter, LinkedIn, Emails and Amazon Mechanical Turk. A total of 500 links were sent. Amazon Mechanical Turk was used to target a diverse range of responses. All in all, 250 responses were obtained indicating a 50% response rate. A non-response bias analysis was conducted using the first 50 responses, and the findings indicated that non-responses did not affect the findings. Out of the 250 responses, 45 were excluded because 32 had no online shopping experience, and although the remaining 13 had shopped online before they have never browsed online shopping websites. The latter demonstrated a conflict in their responses and thus were excluded from the study.

4 Results

4.1 Respondents' Characteristics

A larger proportion of respondents were those who buy physical products. This was almost three-quarters (76.5%) of the respondents (see Table 2). Out of the total of 157 respondents who buy physical products often, 56% were females and 44% were males. Forty-nine per cent (49%) of respondents who buy physical product were between 25–34 years. Most respondents were either students (38.8%) or in full-time employment (36.3%). With respect to age, majority of respondents (49.8%) were between 25–34 years, and the remainder were 18–24 (23.9%), 35–54 (20.5%) and 5.8% for those over 55 years old. In terms of the highest qualification, 44.4% of the respondents hold a bachelor's degree, 35.1% have master's degree and 13.2% have a doctoral degree or equivalent. The least educational qualification was high school degrees (5.4%). The distribution of those who tend to buy digital products is similar to those who buy physical products except for gender, where male tend to buy digital products while female tend to buy more physical products. All respondents had experienced online shopping and bought an item online within the past six months. Respondents were from a range of different nationality including the UK, USA, Saudi Arabia, India and Pakistan. See Table 2 for details of respondents' characteristics.

4.2 Kano's Categorization of Persuasive Features

The Kano's categories for the 28 persuasive features were generated and the extent of satisfaction and dissatisfaction were also calculated (see Table 3). Variations in satisfaction and dissatisfaction levels were observed among the various persuasive features. Features relating to primary task support (PT) (i.e., reduction, tunneling, tailoring, personalization, self-monitoring, simulation and rehearsal) recorded coefficient of satisfaction *(CoS)* values ranging from 0.30–0.45. Thus, they impact customer satisfaction between 30–45%, whereas their absence may result in customers dissatisfaction *(CoD)* between 8 and 64% - see Table 3. The presence of personalization features in e-commerce websites was observed to increase customer satisfaction by 31%, however, its absence does not significantly affect customer dissatisfaction (8%). Tunneling and rehearsal increase customer's satisfaction (i.e., by 39% and 36% respectively) and their absence also impacts

dissatisfaction levels (i.e., 47% and 46% respectively). Out of the seven primary task support features, one persuasive feature (i.e., self-monitoring) was found to be of significant importance since it had total strength value above 60%. Thus, it is classified as a "one-dimensional" feature (see Table 3). This indicates that the presence of self-monitoring increases customer satisfaction by 45% and affect dissatisfaction by 64%.

Dialogue support (DS) features (i.e., praise, rewards, reminders, suggestion, similarity, liking and social role) was observed to impact customer satisfaction levels between 23% and 63%; whilst their absence impacts dissatisfaction between 13% and 46% - see Table 3. Reward significantly impacts satisfaction because it recorded 65.9% for total strength value and was classified as being "attractive", i.e., presence of reward significantly improves customers satisfaction by 63%, yet its absence will not result in customers dissatisfaction (i.e. 23%). Liking had a total strength value of 58.5%, while customers extents of satisfaction and dissatisfaction were 45% and 46% respectively.

Table 2. Samples and total sample overview

		Physical	Digital	Total sample
Age	18–24	22.3%	29.2%	23.9%
	25–34	49%	52%	49.8%
	35–54	22.3%	14.6%	20.5%
	55+	6.4%	4.2%	5.8%
Gender	Male	44%	58.3%	47.3%
	Female	56%	41.7%	52.7%
Level of education	High school	5.7%	4.2%	5.4%
	Bachelor's degree	42.7%	50%	44.4%
	Master's degree	36.3%	31.2%	35.1%
	Doctoral degree	12.7%	14.6%	13.2%
	Other	2.5%	0%	1.9%
Current occupation	Employed	49.7	49.9	49.7
	unemployed	4.5%	0%	3.4%
	Homemaker	4.5%	6.2%	4.9%
	Retired	1.9%	2%	1.9%
	Student	38.8%	41.7%	39.5%
	Other	0.6%	0%	0.5%
Mean shopping experience in 6 months?		7 times	8 times	8 times
Browsing frequency	Rarely	7.6%	6.3%	7.3%
	Sometimes	27.4%	20.8%	25.8%
	Often	49.7%	47.9%	49.3%
	Always	15.3%	25%	17.6%

Table 3. Results of Kano's model analysis

	Motivation	Category based on frequency	Category strength	Total strength	Category based on strength	CoS	CoD
Primary task support	Reduction	I	27.8	44.9	I	0.37	−0.32
	Tunnelling	I	12.7	53.7	I	0.39	−0.47
	Tailoring	I	34.6	42.9	I	0.30	−0.28
	Personalisation	I	30.7	24.9	I	0.31	− 0.08
	Self-Monitoring	O	8.3	65.9	O	0.45	− 0.64
	Simulations	I	40.5	38.0	I	0.31	− 0.22
	Rehearsal	I	16.1	53.7	I	0.32	− 0.46
			24.39	**46.29**		**0.35**	**− 0.35**
Dialogue support	Praise	I	52.7	25.4	I	0.23	−0.13
	Rewards	A	13.7	65.9	A	0.63	−0.23
	Reminders	I	40.0	36.1	I	0.26	−0.30
	Suggestion	I	36.6	39.5	I	0.33	−0.28
	Similarity	I	13.2	55.6	I	0.43	−0.43
	Liking	I	8.8	58.5	I	0.45	−0.46
	Social Role	I	38.5	38.0	I	0.33	−0.22
			29.07	**45.57**		**0.38**	**−0.29**
Credibility support	Trustworthiness	O	17.1	71.7	O	0.52	−0.66
	Expertise	O	9.3	68.8	O	0.43	−0.66
	Surface credibility	I	38.0	30.7	I	0.22	−0.28
	Real-world feel	O	12.2	69.3	O	0.49	−0.64
	Authority	I	31.2	45.4	I	0.30	−0.34
	3rd party endorsement	I	25.9	48.3	I	0.31	−0.37
	Verifiability	I	20.0	49.8	I	0.28	−0.46
			21.96	**54.86**		**0.36**	**−0.49**
Social support	Social Learning	I	50.2	26.8	I	0.24	−0.14
	Social Comparison	I	43.4	33.7	I	0.26	−0.22
	Normative Influence	I	48.8	29.8	I	0.24	−0.22
	Social facilitation	I	49.8	31.7	I	0.22	−0.24
	Cooperation	I	42.9	37.6	I	0.25	−0.29
	Competition	I	62.9	20.5	I	0.13	−0.14
	Recognition	I	34.1	40.0	I	0.35	−0.23
			47.44	**31.44**		**0.24**	**−0.21**

Credibility Support (CS) features (i.e., trustworthiness, expertise, surface credibility, real-world feel, authority, third-party endorsement and verifiability) were observed to impact customers satisfaction between 22% and 52%, and dissatisfaction between 28 and 66% - see Table 3. Trustworthiness, real-world feel, and expertise had total strength values of 71.7%, 69.3% and 68.8% respectively. These features fell into the category of "one-dimensional". Hence, their presence in e-commerce websites may increase customer's satisfaction by 52%, 49%, and 43% respectively and their omission will negatively impact it by 66%, 64%, and 66%.

Social support (SS) features (i.e., social learning, social comparison, normative influence, social facilitation, cooperation, competition and recognition) affects satisfaction levels between 13% and 35%, and dissatisfaction levels between 14% and 29% - see Table 3. This indicates a relatively weak form of influence on customer's satisfaction and dissatisfaction. All social support feature was observed to be in the "indifferent" category.

5 Discussion and Implications

Although some existing studies have investigated the relationship and impact of persuasion or persuasive systems features on e-commerce websites, none have investigated the phenomenon using the Kano model. Yet, the Kano model provides considerable insight on how customers/users of e-commerce websites evaluate their satisfaction levels. The findings and observations made from this study present several implications on persuasive system design features and e-commerce website designs in particular.

5.1 Primary Task Support Features

Persuasive system features such as primary task support are expected to facilitate user performance in accomplishing their objectives. Almost all primary task support features were indifferent to users of e-commerce platforms (except self-monitoring). This demonstrates that current e-commerce users do not pay much attention to activities that enhance their primary task. It is worth noting that the omission of primary task support as a persuasive feature is not the same as the omission of the primary task itself. That is, without primary task support, users are still be capable of perform all relevant activities on the websites, yet persuasive features, e.g. "one-click" purchase recommendations, the provision of virtual fitting rooms, and "wish-list", are expected to enhance the primary shopping experience. The classification of most primary task support features as indifferent is further supported by the argument that features, such as personalization, recommendation, and tailoring, do not play much of a role in how users perceive e-commerce websites [12]. Mostly, e-commerce website users prefer to enter their personal data at checkout rather than making use of personalization services provided by the sites.

This finding, however, contradicts much existing knowledge that argues that the provision of features that seek to support users to locate their desired products with ease is paramount in e-commerce websites. According to Chu et al. [12] users who have no specific product in mind find primary task support features more useful since, as such features make it easier to locate items. Also, first-time users expect websites to provide them with guides as to how they register or checkout during product purchase. It has also been argued that personalization eases information processing and thus creates positive emotional states in users [42]. Others [43] have argued that personalization is the epitome of persuasion on e-commerce websites. Additionally, even though tailored content is provided to support product selection, users consider such content as ordinary product categorization and do not believe that the tailored content meets their needs; a claim has also been validated by [12]. Other studies have demonstrated that the provision of search

tools and clear layout of information are not paramount on e-commerce websites when compared to education, medicine and financial websites [8].

Self-monitoring emerged as a "one-dimensional" feature. Self-monitoring features provide e-commerce users with the tendency to monitor and adjust their activities or purchase behavior to ensure that it is appropriate based on how it is perceived by others. Findings from this study conform to studies that argue that the ability of users to monitor one's self is imperative in mobile shopping [44]. Self-monitoring plays a moderating role in website use [45] and thus it impacts e-commerce customer satisfaction levels. As a one-dimensional feature, it measures performance on a linear scale and thus it is noticeable by customers when present. Accordingly, it is recommended that designers of e-commerce website must ensure that they provide system support that facilitates users to monitor their actions.

5.2 Dialogue Support

The provision of advance Dialogue support features has become rampant in recent e-commerce platforms. For instance, features including ExpertClerk [46] have been designed to support customers on e-commerce platforms to imitate sales clerks. Others have advocated for the provision of search and choice support [47], yet findings from this study suggest that dialogue support features do not play a key role in e-commerce platform customer satisfaction. Six out of the seven persuasive dialogue support features (Praise, Reminders, Suggestion, Similarity, Liking and Social Role) were observed to be "Indifferent". The exception was Rewards, which was classified as an "Attractive". It is intriguing to note that most dialogue support features were perceived as indifferent in other studies [14], which also demonstrated that dialogue support features were the most dominant e-commerce platform system features. Considering that majority of the respondents were regular users of e-commerce websites, the findings corroborate with studies that claim that dialogue support is significant to new customers when compared to existing customer [48]. Dialogue support features facilitate buyer persuasion [49]. Accordingly, it can be inferred from this study that although the provision of dialogue support features on e-commerce platforms facilitates persuasion, users of these platforms do not perceive it as a contributor to their satisfaction levels. For instance, persuasive features such as reminders become helpful when used to notify shoppers of important issues but not when used as tools of product promotion.

Rewards emerged as the only attractive system feature. These findings agree with existing studies [49–51], which confirms that buyers consider rewards as a key factor to customer satisfaction level. Considering that rewards on e-commerce platforms provide direct and observable benefits to users, it is not surprising that users perceive it as an attractive feature. It is therefore suggested that designers of e-commerce websites must ensure that they involve features that reward users. As explained earlier, attractive features increase satisfaction levels. Considering that persuasive system designs intend to make a user perform a predetermined activity, it is vital that they include attractive features. It is however emphasized that rewards feature on e-commerce websites must target all category of users, this will facilitate regular visits to these websites.

5.3 Credibility Support

Credibility support features had the highest total strength (54.86%). Besides, it was observed to be the only category of features that recorded three features to be one-dimensional (i.e. Trustworthiness, Expertise and Real-world feel). This demonstrates that credibility plays a crucial role in customer satisfaction levels. System credibility has been demonstrated to be vital, as it contributes to users intention to use a system [38]. Perhaps, it can be considered to be the most important feature in persuasive systems design. With respect to e-commerce platforms, website credibility is essential to both users and customers.

The emergence of Trustworthiness, Expertise and Real-world feel as one-dimensional features show that customers and users of e-commerce websites always look out for these features as a measure of satisfaction and are dissatisfied when absent. It has been confirmed that the use of enhanced methods to improve credibility yields favorable customer responses on e-commerce platforms [52]. Some studies [14] have explained that Trustworthiness and Expertise are among the most used system features on e-commerce websites.

Surface credibility, Authority, Third Party Endorsement and Verifiability were all observed to be indifferent. Surface credibility relates to the appearance of the website, and this result suggests that e-commerce users do not consider the aesthetics features of the website as a key ingredient of their satisfaction levels. These findings support arguments by [53], that stipulates that surface credibility has less influence on regular application users. More importantly, further investigations need to be conducted to ascertain why credibility features including Authority, Third Party Endorsement and Verifiability were observed to be indifferent features.

5.4 Social Support

Although Social support features have been identified to promote e-commerce platforms [54], users perceive these features as indifferent. All social support features were observed to be indifferent and they also recorded the lowest total strength (i.e. 31.44%). Thus, they have no impact on user satisfaction levels. Particularly, Competition was observed to be perceived as the feature with the least impact on user satisfaction. It recorded the lowest total strength value of 20.5. Yet, others [38] have explained that perceive social support promotes user's intention to continuous use.

Studies have argued that social supports in virtual environments mostly seek to address user problems through the direct and indirect provision of information, experience, and advice [55]. Therefore, although such a feature may enhance trust among customers and users of e-commerce platforms [56], it has no impact on how these users perceive satisfaction. It is important to note that Social support features are the least utilized system features on e-commerce websites [14].

However, considering that shopping is a social event [57], it is surprising to observe that social support is not perceived to influence e-commerce website user satisfaction. Thus, there is a need for further studies to investigate this phenomenon to understand the drivers of such findings.

6 Conclusions and Future Work

This study explored user perceptions of persuasive features on e-commerce websites that influence their satisfaction or dissatisfaction levels using the Kano model. According to the Kano model, user satisfaction evolves, and although there are possibilities that perceptions of system features that influence user satisfaction levels on e-commerce websites may change, current findings indicate that no persuasive feature is perceived to be a "must-be" feature. This observation confirms that persuasive features are perceived as add-ons and is not perceived by customers as critical to the ecommerce experience. They enhance overall system qualities, create engagement and support decision-making processes. In this sense, they complement e-commerce design and support user appeal in a competitive environment. Hence, this study serves as a guide to understanding user preferences and contributes to the development of practical guidelines for designing persuasive e-commerce websites.

Three credibility support features (trustworthiness, Expertise and Real-world feel) were observed to be perceived by customers to impact satisfaction. That is, their presence is noticed by users and their absence results in dissatisfaction. Rewards emerged as the only system feature that users perceive to be attractive. All social support features were observed to be perceived by users as indifferent. Future work needs to investigate the causal effects of these findings. In addition, further investigations may be conducted on the impact of within-group cultural differences which might reveal differences on users' preferences of persuasive feature that impacts their satisfaction and dissatisfaction levels.

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