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A Collaborative Model in Persuasive Web Design: Multiple case study of Lazada and Shopee

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Abstract

This study examined online persuasion through website design by using the Elaboration Likelihood Model (ELM) and Persuasive System Design (PSD). This study investigates the phenomenon of the success of Lazada and Shopee to provide guidelines for website designers and local sellers to enhance the e-commerce website's persuasiveness. The persuasive design features in Lazada's and Shopee's e-commerce websites were evaluated based on the design criteria of the ELM and the PSD model. This study has examined (1) the influence of central route elements (Dialogue Support and Primary Task Support) towards Lazada and Shopee user's attitude change, (2) the influence of Lazada and Shopee user's attitude change towards behavioral intention and (3) the influence of Lazada and Shopee user's behavioral intention towards actual online buying behavior. A total of 414 samples were analyzed using Partial Least Square Structural Equation Modelling (PLS-SEM) technique. The results from the analysis indicated that Primary task support through navigation design (PTN) was found to be the most influential persuasive design criteria, followed by Social support through connectedness (SSC), and Dialogue support through argument quality (DSA).

Keywords: Persuasive web design; E-commerce; Lazada; Shopee

1. Introduction

E-commerce is proliferating. At present, around 60% of Internet users now purchase from an e-commerce site at least once a month [1]. The ease of use of e-commerce sites is crucial to increase customer satisfaction, differentiate

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a site, increase market share, and enhance a brand [2]. In 2021, Gunawan et al. have conducted a study that related to e-commerce user interfaces design [3]. It shows that among the various features of an e-commerce website, easy navigation was the main concern of users [3].

According to Loh et al., the process of designing an e-commerce website user interface has been defined. This process emphasizes on interaction design instead of visual design to build a successful e-commerce website [4]. The process started to identify the purpose of the website, define the target users' group, and understand the users' requirements. Majority of the website design principles have put users in the first place. Most of the study shows that user-centered design has played a significant role in designing a successful e-commerce website [5], [6], [7]. In this context, a deep understanding of the target audience of the e-commerce website during the design phase is essential. Son and Kim claimed the same when it comes to persuasive web design on e-commerce website [8]. Moreover, the visual appeal also important to implement persuasion design on the e-commerce website [9]. For instance, to persuade users to perform a target behavior, the design of the call-to-action button must be prominent to draw user's attention.

To understand the implementation of persuasive web design in local context, previous studies related to the e-commerce marketplace in Malaysia have been reviewed. According to Kasim et al., the user interface of Lelong.my is user-friendly and easy to use [10]. However, there are many advertisements in the front page of Lelong.my which caused longer response time for home page loading [10]. Lelong.com.my was the most favorable e-commerce in Malaysia, but it has been overtaken by Lazada since 2014 [11]. In 2019, a study compared the reputation system in eBay and Lelong.my [12]. The results indicated that Lelong.my do provide two-way feedback but no function for the buyer's feedback section [12].

Although Lazada and Shopee have dominated the e-commerce market in SEA region, Tokopedia still able to sustain and remained it top two position in Indonesia [13]. Previous study showed that the user interface quality of Tokopedia has positively influenced the customer satisfaction [14]. Recent study also revealed that the website appearance and navigation of Tokopedia has significantly influenced customer's purchase intention compared to Shopee [15]. In short, the results from previous studies suggested that there is a necessity to study the persuasive applications through web design features and visual web design in e-commerce websites [6], [8], [9].

2. Literature Review

The rapid growth of the e-commerce industry has brought in an excellent opportunity for web developer, commercial and social entities. Online persuasion through this new tool has becomes a new trend. The design of e-commerce websites is related to the conversion rate of the website [16]. The persuasive design has proven to support users with online transactions [17]. Thus, this study aimed to examine the online persuasion on website design through the collaboration of the Elaboration Likelihood Model (ELM) and Persuasive System Design (PSD) principles. This study was conducted on examined persuasive web design criteria on Lazada and Shopee Malaysia, investigate how persuasive design features could influence the online shopping behavior of buyers in Malaysia.

2.1. The Collaborative Model

Website developers can simply apply the PSD model in their design without a strong theoretical background. However, for research purposes, researchers need a theoretical framework to utilise this model. It is crucial to have a better understanding of persuasive-related theory which ensures better analysis of persuasive features on the e-commerce websites. Fogg [18], Oinas-Kukkonen and Harjumaa [19] have devised part of their persuasive design principles based on the principles of social proof, commitment and consistency, authority and liking from Cialdini's Principles of Influences [20]. Based on the reviewed literature, the relationship between Cialdini's Principles of Influences, Fogg's Behavior Model (FBM), Elaboration Likelihood Model (ELM), and Persuasive System Design (PSD) model have been illustrated in Fig. 1 (a).

The ELM model is considered the most widely used theories to explain the attitude change in marketing [21]. Instead, the PSD model mainly explains how the persuasiveness of the system influence behavior change. In 2010, Räisänen introduced the collaboration use of PSD model and the ELM model to improve the persuasiveness when designing a system [22]. Fig. 1 (b) further illustrated the conceptual framework of the collaborative model. The two spirals are the central and peripheral routes that correspondent to direct and indirect routes in PSD model.

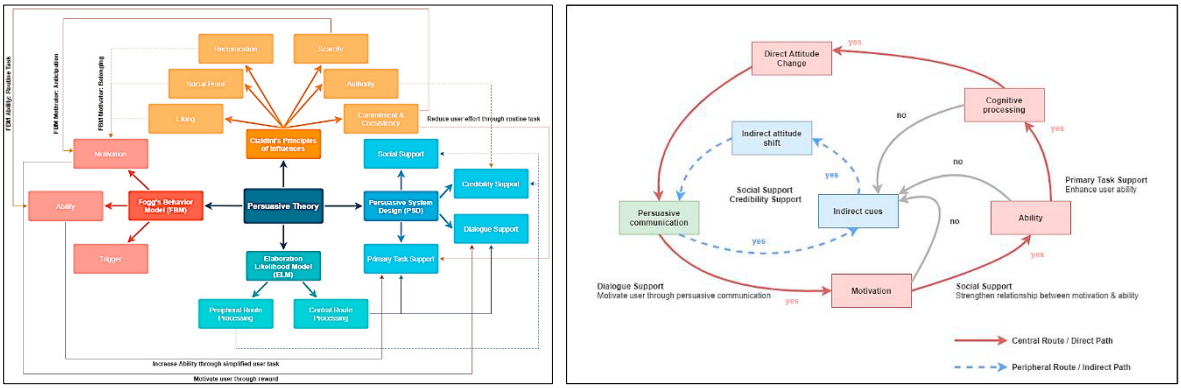

Fig. 1. (a) Relationship between Persuasive Theory (Source: Author). (b) Conceptual Framework of the Collaborative Model

The direct route is applied based upon critical thinking while the indirect route is applied based on rules of thumb. The outer spiral illustrates the direct route formed by persuasive communication, motivation, ability, cognitive processing, and direct attitude change. The inner spiral represents the indirect route, which formed by persuasive communication, indirect cues, and indirect attitude shift. In Fig. 1 (b), the indirect route is drawn with dashed arrows for clarification purposes. The "yes" arrows in the collaborative model are crucial where attitude change happens along with these arrows. The outer part of the spiral is vital as direct attitude change is enduring, resistant and predictive of behavior.

Related to PSD, persuasive communication established by the dialogue task support feature. This feature can strengthen the linkage between persuasive communication and motivation. According to FBM, increasing ability (making the behavior more straightforward) is the path for increasing behavior performance. The primary task support feature in the PSD model can be utilized to increase users' ability. The social support feature can strengthen the relationship between one's motivation and ability. In terms of web design where social support only provides indirect cues, e.g.: "share" function, social media account login, customer reviews which required user's initiatives to act. At certain level, encouragement from others (friends and family or other members in the social circle) will motivate system users and increase one's confidence in their ability. Ultimately, social support could lead to direct attitude change. While the implementation of credibility support feature through indirect cues may lead to an indirect attitude shift.

The collaborative model can be utilized to achieve resistant and enduring direct attitude change to increase conversion rate. Through demonstration and examination of the PSD model in the prior studies, those principles are proven practical, which can serve as a requirements checklist while developing the persuasive system. However, the prior studies do not tackle the persuasion on e-commerce website design from the user's perspective. As such, a need to measure persuasiveness from the user's perspective has become crucial to examine if the design achieved the desired goals (such as increase sales conversion) of the e-commerce website.

2.2. Proposed Research Framework

Persuasive principles have been assimilated into the design of e-commerce websites. There were empirical studies where researchers investigated the users' attitudes, behavior, and usage of information systems. A theory such as the Theory of Planned Behavior has contributed to improving the understanding of users' behavior. In the context of online shopping, recent studies have been shown to support the strong relationship between attitude and behavioral intention [23], [24], [25]. Besides, there is substantial empirical support for the intention-behavior link [26]. The collaborative model of PSD and ELM has been applied follow the logic shown in Fig 1 (b). The proposed research framework consists of a total of 5 constructs that represent the exogenous latent variable. These are DSA, PTN, CSN, PTI, and SSC, while the model has two endogenous latent variables: attitude change and behavioral intention. The hypothetic model also indicates 7 hypothetical relationships, which are as follows:

1) H1: Behavioral Intention positively influences Actual Online Buying Behavior
2) H2: Attitude Change positively influences Behavioral Intention
3) H3: Dialogue Support through Argument Quality positively influences Attitude Change
4) H4: Primary Task Support through Navigation Design positively influences Attitude Change
5) H5: Credibility Support through Navigation Design positively influences Attitude Change
6) H6: Primary Task Support through Image Appeal positively influences Attitude Change
7) H7: Social Support through Connectedness will positively influence Attitude Change

2.3. Persuasive Web Design Elements in the Collaborative Model

Globalizations has turned the World Wide Web into one of the mainstream medias in modern society. A nicely designed website is not only about the visual appeal but also focus on content quality and usability. Lacking in any aspect could result in demolishing excellent impression for website users. According to Rehman et al., web design elements are proven to have significant relationships with the online shopping intention [27]. These aesthetic and design features are associated with conversion rate and convert e-commerce visitors into purchasers [16]. A successful website is the product of a combination of engaging content, high usability, and aesthetic design. In digital shopping environment, the designer must determine the right balance between visual and textual information with consideration of products' type [28]. The essential principles of persuasive website design have been outlined (configure based on Fig. 1(b) and Fig. 2), which can be considered while developing a website. These principles will help web designers to develop a website with enhancing persuasiveness. Table 1 shows the persuasive web design elements which extracted from the PSD/ELM collaborative model.

Table 1. PSD/ELM Persuasive Web Design Elements.

Constructs	Items Measurement
H1: DSA	- Virtual Rewards, E.g.: Cash Back, Daily Check-In Coins.
	- Reminders for pick up parcels, flash sales, promotions, voucher expiration.
	- Precise and real-time purchase suggestions.
	- Provide multilingual contents.
	- Information is well-organized, products listing neatly without pop-up advertisements.
	- Live chats and 24/7 customer support.
H2: PTN	- Clear and precise navigation facilities for information content.
	- Guiding different user through tailoring information.
	- Tracking the purchasing, shipping, and delivering process.

H3: CSN	- Third-party authorized content.
	- Regularly updated information.
	- Provided contact information and office address.
	- Third-party secured transaction and professional design standards.
H4: PTI	- Using images, gradually guiding user through the purchasing process.
	- Distinct and customized content for different user.
	- Using images, showing the differences in products' variant for the purpose of simulation.
	- Provide multiple product's images from different angles.
H5: SSC	- Provide means for user to learn and compare products' price and features in the online social community.
	- Large users base in online social community normalizing the use of the platform.
	- Allow users to build social network in different social media platforms.
	- Establish official business page in well-known social networking website.
	- Real-time data analysis in predicting users' behavioral patterns.

3. Methodology

In this study, an online survey was set up targeting a selected sample of current visitors of Lazada and Shopee in Malaysia. A questionnaire that is consistent with studies of e-commerce together with the necessary adjustments for web design elements and customer online shopping behavior had been developed and employed to collect the data for the constructs of the conceptual model. The data collecting process was taken three months (October 2021 to January 2022) to complete. Respondents were required to answer a questionnaire about their reaction with Lazada and Shopee web design characteristics. The links of the online survey are attempted to put in different chat rooms to attract a significant number of respondents (Lazada Sellers, Shopee Voucher, Lazada & Shopee Buyers, etc.), shopping groups (We Share, Smart Buyers, Online Shopping Group, etc.) in social media, and web pages (Lazada and Shopee sellers' online store). The questionnaire had been posted on above mentioned chat rooms and shopping groups daily. Besides, the questionnaire had been sent to Lazada and Shopee official Facebook page's followers. After completed the survey, the respondent was requested to share the questionnaire to their friends and family. In return, Lazada or Shopee promo code was sent to the respondent who has completed the survey. A total of 432 samples were collected. After data cleaning and removed outliers, 414 samples were analyzed.

4. Data Analysis & Results

This section discusses the application of Partial Least Squares (PLS) path modeling used to determine the impact of the persuasive design criteria affecting actual online buying behavior. The path model was developed based on the results yielded in previous sections. The researcher implemented a three-stage approach to evaluate PLS-SEM. Stage 1 relates to the measurement model (or the outer model) assessment; Stage 2 is the evaluation of the structural model (or the inner model) whereas Stage 3 deals with hypotheses testing.

4.1. Measurement Model Evaluation

The item reliability and convergent validity of the hypothetical model were tested using SmartPLS 4.0 software, all constructs in the model were achieving the satisfactory level of item reliability and convergent validity. The results show that all constructs had achieved a satisfactory level of item reliability and convergent validity. This means the AVE value for all manifest variables was more than 0.5 and the composite reliability value was more than 0.7. Based on the results, it was found that all the constructs in the model achieved required values of individual

item reliability, AVE, and CR. Thus, the model was considered satisfactory. Fig. 4. illustrated the outer loading of the measurement model.

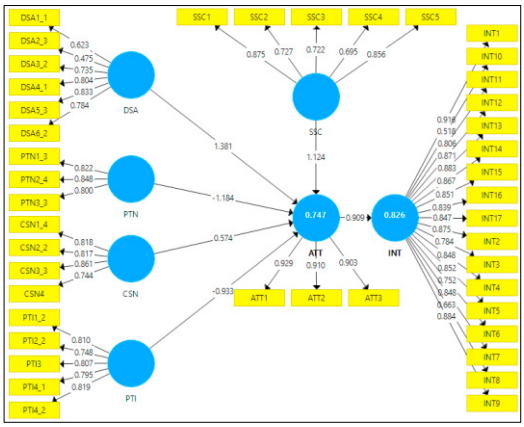

Fig. 2. Outer Loading of Measurement Model

4.2. Structural Model Evaluation

Table 2. shows the path coefficient value for all the constructs in the model, in which the primary task support through navigation design (PTN) construct has the highest coefficient value of 0.333. This means the PTN related persuasive design criteria have a high level of influence to online buyers' attitude change. R^2 indicates the constructs' percentage of variance in the model. R^2 of endogenous can be assessed as substantial = 0.67, moderate = 0.33 and weak = 0.19. R^2 was generated for the tested model to be 0.747 for the attitude change and 0.826 for the behavioral intention. This means that the 5 constructs explained 74.7% of the variance in attitude change. While the attitude change has explained 82.6% of the variance in behavioral intention. This value of R^2 is higher than the cut-off values, which demonstrates that the developed model has substantial explaining power.

Table 2. Path Results of the Model.

Construct	Attitude Change (ATT)	Behavioral Intention (INT)	Rank
Primary Task Support through Navigation Design (PTN)	0.333	-	1
Social Support through Connectedness (SSC)	0.232	-	2
Dialogue Support through Argument Quality (DSA)	0.207	-	3
Primary Task Support through Image Appeal (PTI)	0.072	-	4
Credibility Support through Navigation Design (CSN)	0.047	-	5
Attitude Change (ATT)	-	0.859	-

4.3. Hypotheses Testing

The hypotheses considered in this study were tested by assessing the significance of path coefficients using a T-test. This was performed by a bootstrapping test in the PLS path model, which performs resampling to calculate the T-value for each construct. In this study, a non-parametric bootstrapping test was run with 5000 replications. The T-value for each construct is shown in Table 3. Since there is substantial empirical support for the intention-behaviour link, the hypothesis testing was omitted for H1. The results indicate that PTN has the strongest effect on ATT (0.333), followed by SSC (0.232), DSA (0.207), PTI (0.072), and CSN (0.047). The hypothesized path relationship between PTN and ATT is statistically significant. However, the hypothesized path relationship between PTI and

CSN is not statistically significant as the standardized path coefficient for these two constructs is lower than 0.1. Hence, it can be concluded that PTN, SSC, and DSA are moderately strong predictors of ATT, but PTI and CSN do not predict ATT directly. According to Table 4.19, only ATT ($\beta = 0.859$, $p < 0.05$), SSC ($\beta = 0.232$, $p < 0.05$), PTN ($\beta = 0.333$, $p < 0.05$) and DSA ($\beta = 0.207$, $p < 0.05$) were found to have t-values > 1.96, the level of significance was met. Thus, H2, H3, H4, and H7 are supported.

Table 3. Path Results of the Model.

Hypothesis	*β*	*t*-values	*p*-values	Interference
H2: ATT > INT	0.859	49.279	0.000	Significant
H3: DSA > ATT	0.207	2.451	0.014	Significant
H4: PTN > ATT	0.333	2.661	0.008	Significant
H5: CSN > ATT	0.047	0.576	0.565	Non-significant
H6: PTI > ATT	0.072	0.843	0.399	Non-significant
H7: SSC > ATT	0.232	3.372	0.001	Significant

5. Discussion & Conclusion

In general, this research helped to save time and resources for e-commerce websites designers with the developed persuasive design guideline. The websites designers can emphasize on the persuasive design elements under dialogue support, primary task support, and social support when designing an e-commerce website. Besides, web marketer can utilize the persuasive practices to attract potential customers and increase sales conversion. The persuasive features applied in Lazada and Shopee have been analyzed thoroughly.

According to the results, most of the respondents were young adults (age 24 and above) who built up the majority Malaysia online consumer [29]. The results of this study are replicable and reliable as it targeted a large online consumer base from Lazada and Shopee [28]. Through the study, web designers could implement the persuasive practices while designing online store. For instance, to apply the “Liking” technique, the copywriting of the website must be concise and straight to the point. The product description can be listed in point-form, emphasize the unique selling point with bold text. When comes to “Similarity” feature, displays products price and information in English or Bahasa Malaysia would make consumers feeling familiar.

Due to the COVID-19 pandemic, the internet was flooded with disinformation [30]. Hence, the social support is crucial in building trust between online consumers and online sellers. With the implementation of “Social Role” feature, sellers can further enhance online consumers’ confidence when purchasing products from their online store. Sellers can provide prompt assistance for their online customer in products return and refund.

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