MEASURING USABILITY AND PURCHASE INTENTION FOR ONLINE TRAVEL BOOKING: A CASE STUDY

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User experience is vital in usability evaluation to understand all aspects of user interactions with a product or system. The usability includes user satisfaction, efficiency, and effectiveness to achieve certain goals. On the other hand, to support the sustainability of the business, it is necessary to know the factors that significantly affect purchase intention through online travel booking application. The main aim of this paper is to investigate the usability of online travel booking system and consumer-level factors of purchase intention in online travel booking application. The research attempt to find whether product diagnosticity influences perceived quality and product trust and generally impacts purchase intention. In this study, we select an existing online travel booking application named Traveloka. The system usability scales (SUS) were used to evaluate the usability for web applications. A total of 1,225 respondents participate in online questionnaire using Google form. Most of the respondents recruited are based in Jakarta, Indonesia. The overall SUS score is only 56.13 from 100. The results show that intention for purchase is influenced by product trust and perceived quality. Moreover, the product diagnosticity (PD) supported perceived quality (PQ) and product trust (PT), and variable of product trust (PT) also supported perceived quality (PQ).

Keywords: usability, purchase intention, online travel booking, system usability scale

1. Introduction

The context of user experience (UX) research in the field of human–computer interaction (HCI) has become a topic of major interest. The deliberation of all aspects of the user interaction with products, systems or services can be defined as UX, and usability became one of the important criteria for UX evaluation [1]. The purpose of usability evaluation is to find out the level of user satisfaction in using a product or application through various methods of collecting feedback from users, that can be collected through interviews and surveys using a questionnaire [1–4]. Usability, ease of use, entertainment, and complementarity are four dimensions of the quality of a website that can influence eTrust and online booking intention [5].

On the other hand, the growth of smartphone users also supported the acceleration of online transportation business. Based on Google insight for brand 2018, Indonesia's online travel market is the largest and fastest growing in Southeast Asia. The online travel market in Indonesia grew at a compounded annual rate of 20%, it grew from $5 billion in 2015 to $8.6 billion in 2018, and is expected to reach $25 billion in 2025 (Google Temasek e-Conomy SEA, 2018). Referring to the increasing use of smartphones, the business company must develop strategies to study the consumer behavior that influences purchase intention, including product involvement and trust [6–8].

In this study, SUS were used to measure the usability of the online travel booking website, and to identify the factors that influence the intention to purchase flight ticket or to book hotel.

2. Travel booking applications

The growth of information technology and communication (ICT) leads people to conduct all transactions through online networks, including travel booking. The starting point of online travel booking witnessed pioneering of online travel agents (OTAs) such as Expedia, Travelocity, and Priceline in the 1990s [9]. In Indonesia, online travel booking becomes more popular after the launch of several online travel booking applications, for instance, Traveloka. Previous research was conducted to measure consumer-level factors of
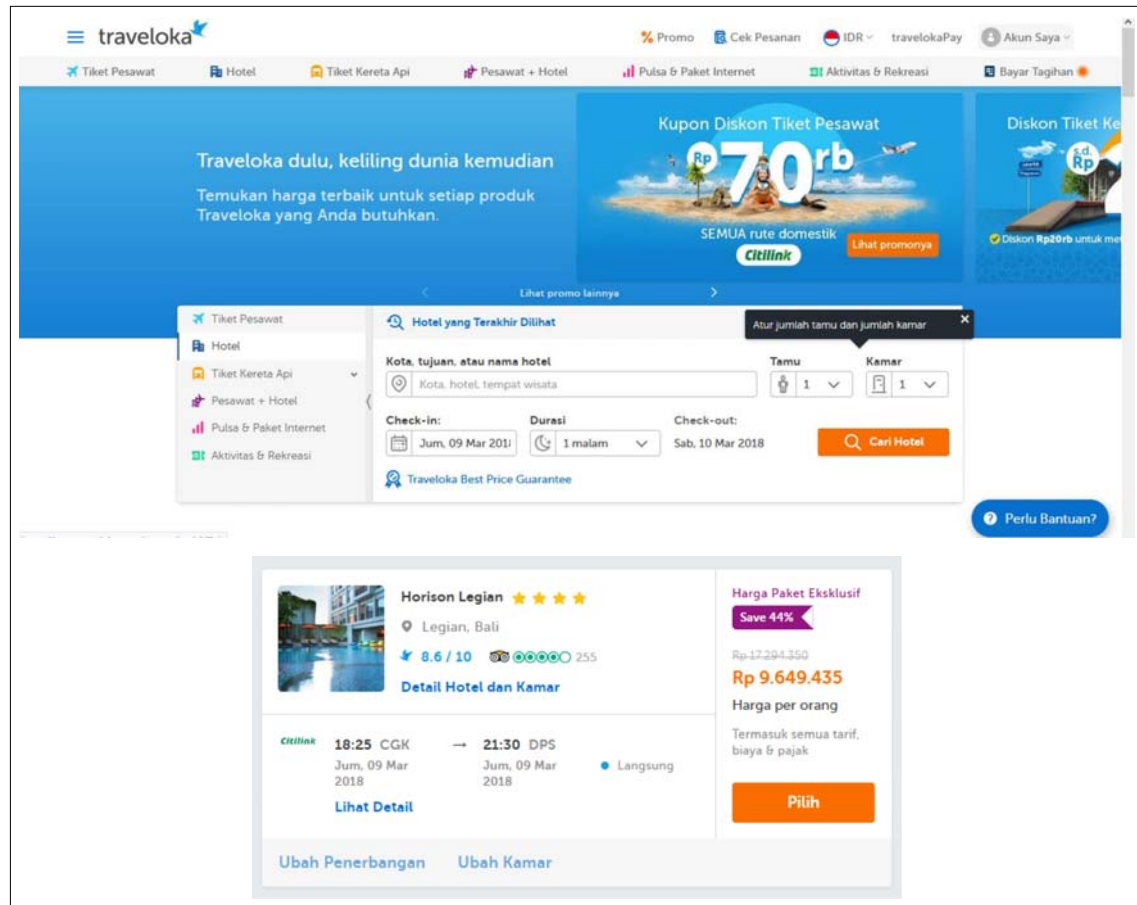
Fig. 1. The interface of Traveloka website (https://www.traveloka.com)

purchase intention in online travel booking and how online advertisements affect purchase intention in online travel booking [10, 11]. Traveloka is an Indonesian unicorn company that provides airline ticketing and hotel booking services online for domestic and international destinations. This Jakarta-based company was established in 2012 by Ferry Unardi and Derianto Kusuma. In the beginning, Traveloka website functioned only as a search engine for flight tickets to compare the price of airline tickets from various other sites. In mid-2013, Traveloka changed its business platform to online flight tickets booking and soon entered the hotel room reservation business in July 2014. It recently expanded to provide lifestyle products and services, such as attraction tickets, activities, car rental, and restaurant vouchers. Figure 1 shows the website interface of Traveloka to search for flight ticket and hotel.

3. Materials and methods

3.1. System usability scale

User evaluation needs to gain positive user experience and better usability with the product. Understanding

of the usability will improve user satisfaction, mainly for users with limitations such as the elderly. Prior research on user evaluations by Ali et al. has evaluated the digital nutritional education package acceptance levels among older adults [4]. The questionnaires included questions on demography data which evaluated contents, graphics, colour, font size, audio, usefulness, and ease of use [2].

System usability scale is a common scale for measuring usability feedback from users [12]. Some researchers called this scale "quick and dirty" since it measures usability quickly with limited respondents [13]. The questionnaire in this study consisted of ten simple mixed positive and negative statements which represent all aspects of usability. For each question, the respondents rank the measure of their adjustment using a 5-point Likert scale with descriptions performing from strongly disagree 1) to strongly agree 5). In this regard, the odd and even number of questionnaire items should be the focus for counting the SUS score. For odd number (1, 3, 5, 7, and 9), the SUS score is the selected scale value minus 1. For even number (2, 4, 6, 8 and 10), the SUS score is 5 (five) minus the selected scale value. The SUS score was yielded from the sum of 10 scores multiplied by

2.5, as shown in Eq. (1). For all SUS scores their averages have been counted to ease interpretation of the result [12]:

$$\text{SUS} = 2.5\left[\sum_{i=1}^{5}(Q_{2i-1}-1)+(5-Q_{2i})\right]. \qquad (1)$$

Franco et al. have completed the recent study of the use of system usability scale questionnaire for evaluating a web-based graphical food frequency assessment system [14]. Little et al., on the other hand, gathered feedback about a mobile application for patients rehabilitating [15]. Furthermore, Dexheimer et al. evaluated the usability of Self-Monitoring Activity-Restriction and Relaxation Treatment (SMART) application for youth with morbidity associated with mild traumatic brain injury (mTBI) [16], while Noprisson et al. dealt with evaluating the m-Government application [17]. Besides, Harrati et al. explored user satisfaction with the e-learning system [1].

This study employed questionnaire items from the system usability scale (SUS). It was a mix of negative and positive items formed into ten questions in the questionnaire, that has been translated into Bahasa Indonesia by Sharfina and Santoso [18], to evaluate online travel booking application. The collected data was processed based on the guidance of SUS Scoring [12].

3.2. Purchase intention

The research about purchase intention on online travel booking application has been completed by [6, 7],
[19]. Enrique et al. (2015) conducted research about perceived value and trust influences on the intention to purchase travel online, the research attempted to focus on examining the influence of consumers' perceived information quality, privacy and security on trust in online travel booking [7]. Research of Sparks and Browning (2011) investigates how online reviews can influence perceptions of trust and consumer choice on hotel booking [19]. Lien (2016) observed the effects of brand image, perceived price, trust, and value on Taiwanese online hotel booking decisions, the results confirm that brand image positively influences perceived price, trust, value, and purchase intentions [20].

Product diagnosticity refers to how much consumers used their trust, experience and knowledge to define the expected quality of product. If consumers have only the limited trust, experience and knowledge to evaluate a product, then consumers will find it difficult to make purchase decisions [21]. Perceived quality is related to consumers' point of view regarding the whole of product quality [22]. Product trust is a psychological mechanism that reflects the consumers' perspective on the openness and integrity of the seller to reduce the perceived risk and increase their intention to transact in the online marketplaces [23]. In the persuasive technology, users evaluate the reliability of technology at various stages of interaction based on various elements of trust [24]. Trust in an online travel website can be determined based on the quality of the information displayed on the website [7].

In this study, the research model was an adapted model of Buapremmee and Polyorat (2016), evaluat-
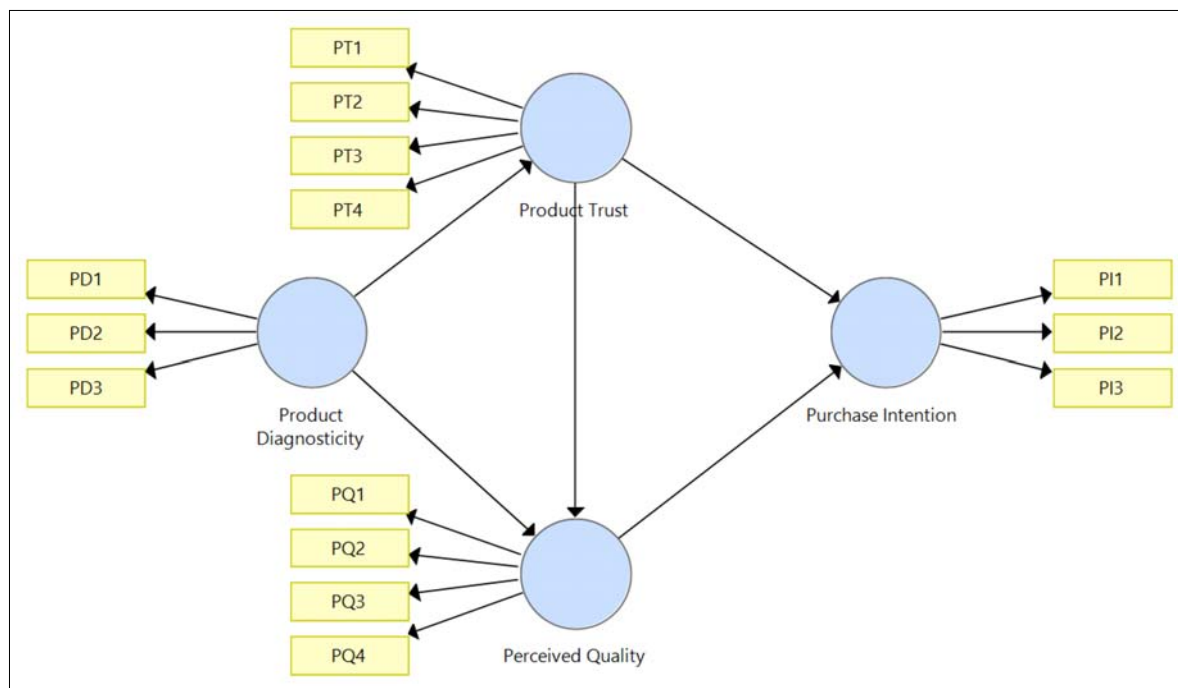

Fig. 2. Research model of purchase intention [25]

ing product diagnosticity, perceived quality and product trust to purchase intention [25]. Some variables have been deleted in this research to focus on product diagnosticity, perceived quality and product trust. The research model of this study is presented in Fig. 2.

4. Results

One thousand two hundred and fifty-five valid respondents were selected from Jakarta, Indonesia. The researcher used two established criteria to find respondents in this study. First, the respondents had to be familiar with the Internet and smartphone. Second, the respondents had to have experience with online travel booking application of Traveloka in Indonesia. To get the valid questionnaire, we used IF-logic and filtering from Microsoft Excel software. We eliminated those questionnaires that contained the same answer for all 10 questions.

Table 1 presents the distribution of the final responses to this study, which contained 1,225 data and SUS score.

The basis for interpreting the study results was the data from the online questionnaire involving 1,225 respondents. The respondents were asked to answer questionnaire items based on their experience using online travel booking application. This study is essential to inspect and review the current online travel booking application in order to get recommendations about the content and design of an application that is simple and user friendly [26].

4.1 Usability analysis

In managing the results, the researcher grouped the data based on gender, age, and education level. Based on the guidance of SUS Scoring [12], the results were analyzed and discussed.

Table 1. Number, SUS score and percentage of respondents

Classification		Number	SUS score	Percentage (%)
Gender	Male	586	55.70	48
	Female	639	56.52	52
Age	<21	589	55.64	48
	21–30	591	56.51	48
	31–40	31	59.11	3
	41–50	12	52.91	1
	>51	2	62.5	0
Education Level	High school	630	55.76	51
	Diploma	112	57.54	9
	Undergraduate	449	56.41	37
	Graduate	34	54.00	3
Total		1,225	Avg 56.13	100

Table 2. Result of questionnaire items

No.	Usability questionnaire item	Mean	SD
Q1	I think that I would like to use this system frequently	3.71	0.96
Q2	I found the system unnecessarily complex	3.89	0.85
Q3	I thought the system was easy to use	4.01	0.82
Q4	I think that I would need the support of a technical person to be able to use this system	3.23	1.22
Q5	I found the various functions in this system were well integrated	3.84	0.83
Q6	I thought there was too much inconsistency in the system	3.22	1.11
Q7	I would imagine that most people would learn to use the system very quickly	3.84	0.85
Q8	I found the system very cumbersome to use	2.96	1.22
Q9	I felt very confident using the system	3.82	0.86
Q10	I need to learn a lot of things before I could get going with the system	3.46	1.14

First, the results of the system usability scale (SUS) based on gender showed that the proportions of males and females are 586 (48%) and 639 (52%), respectively. Based on Table 1, the highest score is for the female respondents' group, and the lowest score is for the male respondents' group. In this case, there is no significant difference between males and females, which concludes that all genders have a similar assumption about the usability of the application.

Second, the results of the system usability scale (SUS) based on age. Respondents of age under 21 are 589 (48%), respondents of age 21 to 30 are 591 (48%), respondents of age 31 to 40 are 31 (3%), respondents of age 41 to 50 are 12 (1%), and the respondents of age 51 and above are 2 (0.1%). Based on Table 1, the highest score is the group of respondents of age 51 and above, while the lowest score is the group of respondents of age under 21. However, in the group of age 51 and above there are only two respondents, which is insignificant. In this scenario, the researcher focused on the group of respondents of age 31 to 40 in the sense that the interface design is more suitable for respondents of such age.

The results of the system usability scale (SUS) based on the education level of the respondents. The results showed that among respondents with high school, diploma, undergraduate, and graduate level, the highest score is in the diploma level respondents' group, and the lowest score is in the graduate level respondents' group. In this case, there is no significant difference between all groups of respondents. This scenario shows that the literacy of information technology (IT) to use the system was not depending on educational level by virtue that it is a general knowledge which is familiar to all educational levels.

The SUS score for each question item is shown in Table 2. The respondents rate each question item with a scale range of 1 to 5. The question item number

3 obtained the highest score with the lowest standard deviation. It means, most respondents agreed that the system is easy to use.

The overall SUS scores are only 56.13 based on 1,225 respondents' perspective. This score result of SUS is below 68 (average), which requires necessary enhancement. From the SUS score of each item question and feedback from the user, improvement is needed to simplify the system in order to increase the user satisfaction and user's confidence.

4.2. Purchase intention analysis

To analyse data, this research used SmartPLS to support analysis process. The result of data analysis will be used to answer research questions and hypotheses [10]. To validate structural model, this research used a partial least squares (PLS) regression by using bootstrap resampling procedure with 1052 data, where some of the questionnaires were excluded from the research data set being invalid questionnaires. To validate convergent validity, any questionnaire items whose loading factors were not significant at 0.7 were deleted. In this research, all indicators are retained because their outer loadings or loading factors are all 0.7 or higher as shown in Fig. 1. Based on the result of data analysis, which is presented in Fig. 3 and Table 4, product trust (PT) has the biggest influence to purchase intention (PI) with t-value 18.935. On the other hand, variable of perceived quality also has an influence to purchase intention (PI), however, it is only showed with t-value 3.197. Moreover, the product diagnosticity (PD) supported perceived quality (PQ) and product trust (PT) with t-value 13.992 and 10.702. The variable of product trust (PT) also supported perceived quality (PQ) with t-value 12.325.

Table 3. Research model with t-statistics value

| Variables	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	t-statistics (|O/STDEV|)	P-values	Result
Perceived quality → Purchase intention	0.096	0.098	0.03	3.197*	0.001	Supported
Product diagnosticity → Perceived quality	0.45	0.449	0.032	13.992*	0	Supported
Product diagnosticity → Product trust	0.401	0.4	0.038	10.702*	0	Supported
Product trust → Perceived quality	0.348	0.348	0.03	12.325*	0	Supported
Product trust → Purchase intention	0.562	0.562	0.03	18.935	0	Supported
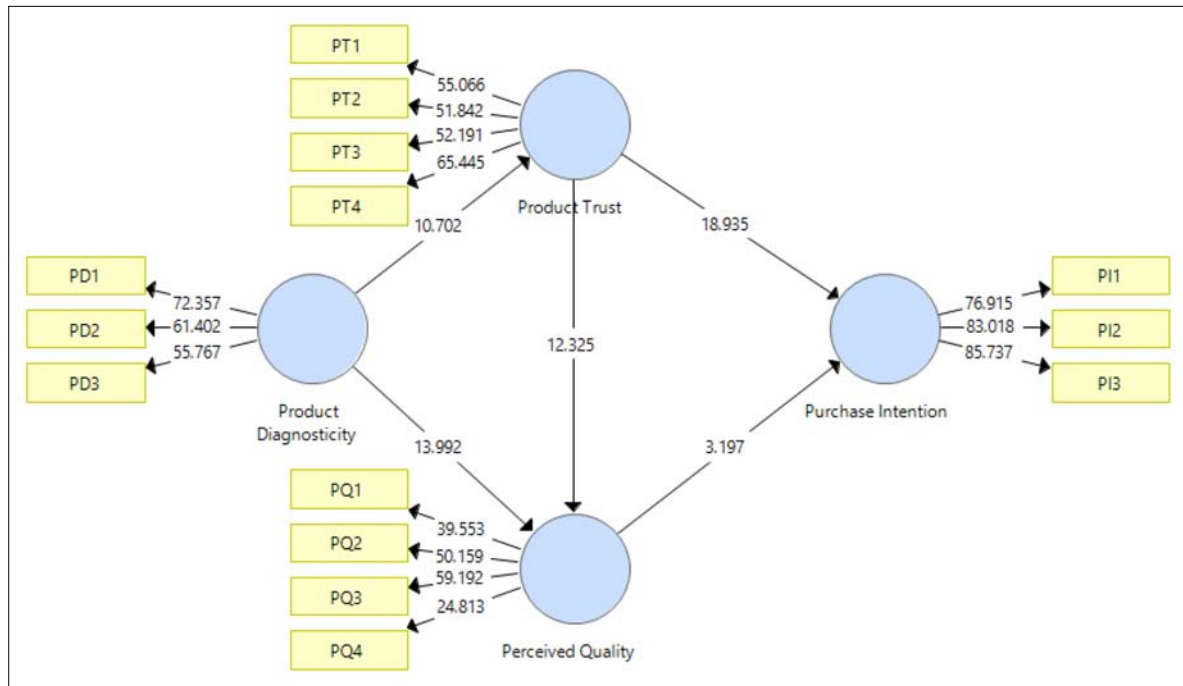
Fig. 3. Research model with *t*-statistics value

5. Discussion

This research study gives a contribution to the evaluation of online travel booking in Indonesia from the perspective of users. The SUS evaluation results show the need for improvements in simplifying the system, based on the score of SUS questionnaire item number two and number three, whereby users found the system unnecessarily complex even though they think the system is easy to use. The experiment confirmed that SUS is an easy method to measure the usability. However, SUS is not adequate to disclose the deficiencies of the system and needs to be carried out together with other evaluations [1]. The usability of a website is an important component of user experience. An understanding of consumer perceptions and behavior can be achieved through appropriate appreciation for the usability of the website [27].

As for the study of purchase intention on online travel booking in this research, the results indicate that product trust was the most influence to purchase intention. Whereas product diagnosticity supported perceived quality and product trust. Product diagnosticity was related to the experience, knowledge and trust of the user about the product. Trust and social presence in social commerce are identified as other factors that influence purchase intentions [8].

There are several limitations in this research. First, the age distribution of participants was not evenly distributed, percentage of participants under the age of 31 years was too large – even though young customers are potential online buyers, yet they were over-repre-

sented. Second, except for product diagnostics, product quality and product trust that have been examined, other influential factors such as perceived value, perceived security and privacy will be interesting to add as important factors that influence buying intentions. Third, in this study we focused on investigating the online travel booking website Traveloka in Jakarta. Hence, generalization of model results may not apply to other systems or countries. Future research must examine other factors in purchase intention.

6. Conclusion

This research aims to represent an insight about interface recommendations for an online travel booking application that is suitable with consideration of the characteristics and nature of Indonesian people. This study employed questionnaire items from the system usability scale (SUS). The final respondents for this research contained 1,225 data that was drawn from Jakarta, Indonesia. The overall SUS scores are only 56.13 based on 1,225 respondents' perspective. This score result of SUS is below 68 (average), which requires further advancement. Based on the reviews from respondents, some points require improvement including simple interface design, reduction of memory size used by the application, the feature to communicate with customer service easily, data integration, and notice of the time for completing payment.

The causal relationships were analyzed using PLS regression and the results show that product trust (PT) has the biggest influence to purchase intention

(PI). On the other hand, the variable perceived quality also has an influence on purchase intention (PI), however, it is not too significant. Moreover, the product diagnosticity (PD) supported perceived quality (PQ) and product trust (PT) and the variable of product trust (PT) also supported perceived quality (PQ).

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