

A Model of Indonesian Consumers' Online Shopping Behavior, an Extension of TAM

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ABSTRACT

The aim of determining the online shopping behavior of Indonesian consumers was to create a model of online shopping behavior in Indonesia. The specific goal was to examine and develop a model of online shopping behavior in Indonesia using the Technology Acceptance Model, which is integrated with e-trust, security, and perceived risk as moderators. This research used a descriptive analysis method with a quantitative approach. Primary data were obtained by distributing questionnaires with 385 respondents as samples, using an online survey. The questionnaire was analyzed to determine the effect of the Technology Acceptance Model on Purchase Intention in online marketing through the moderating role of trust, security, and risk. The object of this research was online shopping users in Indonesia. The population of this study was all consumers who used the Internet to make online purchases (Bibli.com, Tokopedia.com, Bukalapak.com, Beribanka.com, Shopee.com, or other online product marketing sites) either through smartphone media or other media (PCs, and laptops). Samples were taken using the non-probability sampling technique with the purposive sampling method and analyzed using SEM. The results showed that perceived usefulness positively affected consumer attitudes, perceived ease of use positively affected consumer attitudes, perceived ease of use positively affected purchase intentions, perceived ease of use affected purchase intentions strengthened by perceived risk, consumer attitudes positively affected purchase intentions, attitudes affected purchase intentions strengthened by security, and attitudes affected purchase intentions strengthened by e-trust.

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1. Introduction

The industrial revolution means that all human activities always utilize technology and its influence on the world is enormous. Industrial Revolution 4.0 is the latest progress that is most widely implemented by industry [1]. However, a new idea has emerged recently, the industrial era 5.0 which emerged after the pandemic [2]. The Covid-19 pandemic has indeed brought major changes to human life, especially the economic aspect. The COVID-19 pandemic has accelerated the growth of the e-commerce industry in Indonesia and increased public consumption on digital platforms. People also shop more online than they shop directly at locations [3].

Many industries are changing their business models, most of which have digitalized. Without exception, many companies are currently marketing online technology-based goods to provide ease of interaction and transactions quickly, easily, and dynamically, via the internet network [4]. Therefore, companies are creating online marketing practices through mobile marketing media, to build consumer perceptions of a product or service.

Indonesian internet users are continually increase from time to time [5][6]. Based on the latest survey by the Indonesian Internet Service Providers Association (APJII), the number of Indonesian Internet users has reached 215 million. The internet penetration rate in Indonesia grew from 77.02% in 2022 to 78.19% in 2023. Compared to previous years, there has been a surge in internet penetration in the country. For example, in 2018, penetration was 64.80%, which continued to grow in 2019-2020 with internet penetration of 73.70%. By gender, the amount of internet penetration and contribution is almost the same. This condition means that there is no difference, and the internet is very common nowadays. In terms of age, the 35-54 age group is the one who likes surfing the internet the most. Then followed by the 19-34 year age group, where the difference is quite slight. This is slightly different from the previous year where the largest number of internet users were aged 19-34 years. The percentage of internet use in rural and urban areas has also increased and is not much different, namely rural areas at 79.79% and urban areas at 87.55% [5]. Most Indonesians use the internet to search for information including information and product reviews (3.15%), to work online 3.11%, to carry out online transactions 2.92%, to access online financial services 2.86% and to access transportation 2.85% [5]. The use of internet network access is increasing from year to year, not only used when individuals search for information on a product or service and brand but also to interact with other users directly without having to meet face to face easily and quickly throughout the world, including Indonesian society as can be seen in the following data illustration [5][6].

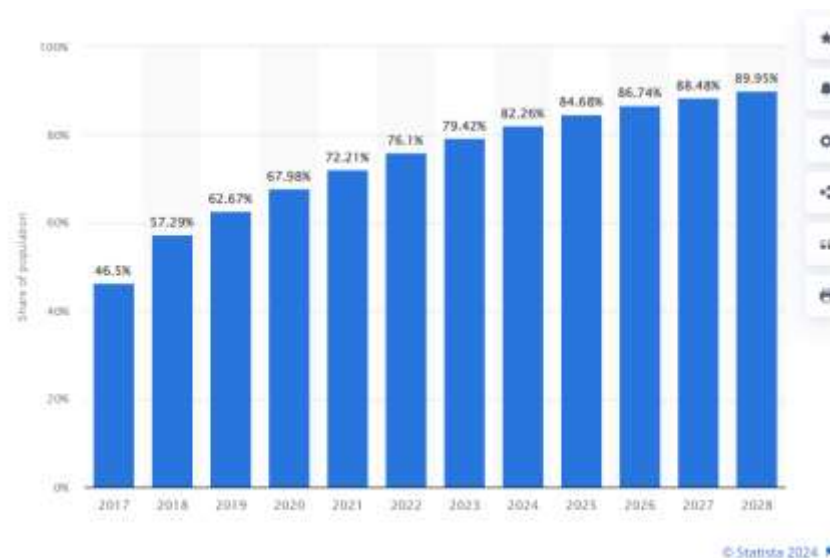


Figure 1.1 Indonesian Internet User Penetration 2017-2028
Source: [5][6]

The mobile marketing trend is also growing as consumers' attention is shifted to cell phones. Therefore, businesses follow this trend to adapt to consumer desires. However, with technology, mobile marketing activities are easier to attract consumers. On the other hand, the use of online media for shopping is also increasing [7] with mobile marketing devices [8].

One of the mobile marketing devices that continues to experience an increase in the number of users is e-commerce. Statista Market Insight reports that e-commerce usage continues to increase from 93.42 million users in 2018 to 178.94 million users in 2022 and is predicted to increase to 244.67 million users in 2028. Information regarding the increase in the number of e-commerce users commerce in Indonesia is explained in Figure 1.2 below:

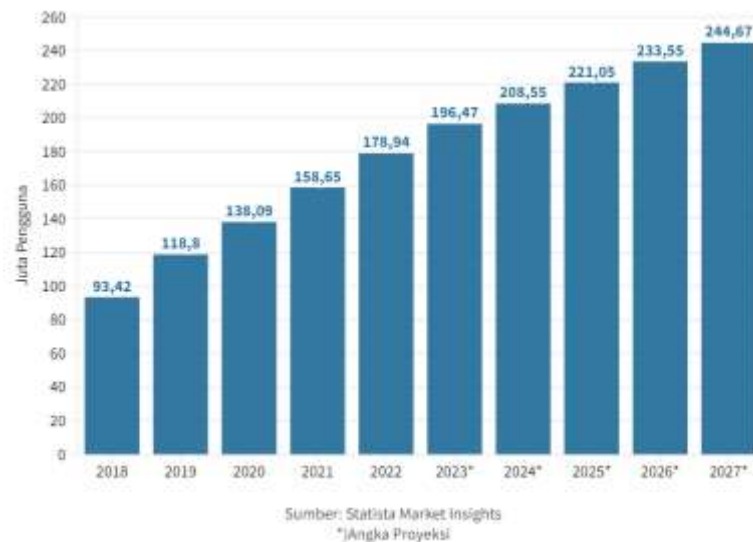


Figure 1.2 Data Indonesians E-Commerce Users 2018-2027*
Source: [9]

The development of online shopping behavior using applications has led to the Consumer Behavior Theory development, with the Technology Acceptance Model (TAM). The TAM model was first introduced by Fred Davis in 1986. Davis's technology acceptance model (TAM) is one of the most influential approaches to explain and predict user acceptance of information systems [10]. TAM has become one of the most widely used and empirically validated models within information systems research. This model (TAM) is based on the Theory of Reasoned Action (TRA) and to some point on the Theory of Planned Behavior as an extension of the TRA proposed by Ajzen [11]. According to [10], the goal of TAM is to provide an explanation of the determinants of computer acceptance that is generally capable of explaining user behaviour across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified. This model is based on the assumption that the major factors influencing intention to use any technology are predicted by perceived usefulness and perceived ease of use [12]. The perceived usefulness of a technology increases with perceived ease of use. In the TAM literature, four of the most important constructs that have been constantly used are perceived ease of use, perceived usefulness, behavioural intention and actual usage behaviour. The more ease of use a user thinks a new technology is, the stronger his or her intention to use the technology; furthermore, the stronger the usage intention, the greater the actual usage behaviour. TAM model is not a general model and it is designed to be applied only to computer usage behavior [10]. Therefore, the application of TAM model is appropriate for research purposes while studying adoption of online shopping including e-commerce [13].

When consumers use new technology, including e-commerce, consumers do not immediately accept or adopt new technological changes, especially if consumers have a perception that the technology will create risks and security even though the marketer creates trust with communication language that promises that every item purchased and according to the consumer's information, if it does not meet expectations, it can be returned. Many internet users avoid purchasing online due to privacy and security concerns [14]. Research on consumer shopping behavior via online media does not involve just using attitude models or TAM, e-trust plays a central role in transactions, and lack of trust in online businesses is the main reason why many consumers choose not to shop online [15][16][17][18][19][20][21][13] have tried to examine trust in the context of electronic commerce together with other factors. In other words, consumers will use online media in shopping, if consumers believe that online media is the right media to help consumers in shopping. This is also supported by the results of a pre-survey of 60 e-commerce users.

Apart from e-trust, risk acceptance might affect shopping behavior using the application, namely perceived risk. Perceived Risk is defined as a consumer's perception of the unknown and adverse consequences of purchasing a service [22].[23] differentiates two types of risk: inherent risks and

risks being addressed. Inherent risk is the latent risk that a product class has for consumers, while addressed risk is the amount of conflict that a product class can generate when a consumer chooses a brand from a product class in his or her usual purchasing situations. [22] refers to these differences as product categories and product-specific risks; the first reflects consumers' perceived risk inherent in purchasing a particular product in a particular product category. Consumers who are considered at perceived risk can vary depending on their knowledge, experience, and acceptable level of risk [21]. This research focuses on the inherent risk because it reflects the risk inherent in a product category rather than a specific brand [24][25][26][27][28][29][30][31][32][33].

This is very possible to become a new model for TAM development. This research was conducted to examine and develop a model of online shopping behavior in Indonesia, by applying the TAM model, which is integrated with the development of e-trust, e-security, and perceived risk variables as moderators. Investigating the role of moderating variables is very useful for management to create innovative online marketing strategies and develop online technology tools to remove consumers' thoughts that online shopping has many risks, both from the aspect of product quality and from debiting funds through digital payments.

Based on this background, the hypothesis developed from this research is as follows: H₁: Perceived Usefulness positively affects consumer attitudes. H₂: Perceived Usefulness affects consumer attitudes positively. H₃: Perceived usefulness positively affects purchase intention. H₄: Perceived usefulness affects purchase intentions, strengthened by perceived risk. H₅: Consumer attitudes positively affect purchase intentions. H₆: Attitudes affect purchase intentions strengthened by e-security. H₇: Attitudes affect purchase intentions strengthened by e-trust with the following research model:

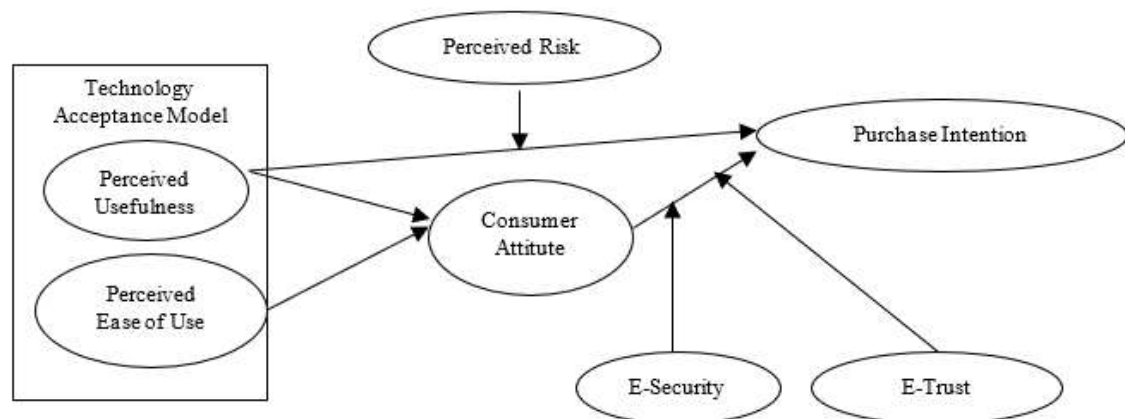


Figure 1.3. Research Model

2. Method

This research stage is based on several theories which are combined to form a research flow:

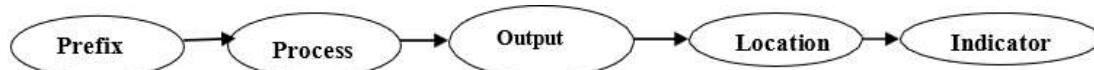


Figure 2.1 Research Stage

2.1. Prefix

Consumers who are dissatisfied and do not know the terms and conditions of a product can experience problems when the product consumed does not meet expectations so consumers feel disadvantaged and will reduce the level of loyalty in using the product. Therefore, it is necessary to have a quality marketing model from the producer side so that consumers feel satisfaction with a product clearly and can identify the extent of the role of e-trust in TAM when consumers do online marketing shopping, maintaining the integrity of the specifications.

2.2. Process

Satisfaction with the use of TAM products is needed by consumers because through this process consumers can directly feel the accuracy of using the online shopping model and its impact on the decision to use online marketing shopping media can be measured.

2.3. Output

It is hoped that after there is a moderator on the trust of online shopping users, consumers will be able to know all the information clearly and can find out the level in the TAM model when using online shopping for a product.

2.4. Location

This research describes the facts and information obtained in the field, both directly and indirectly, and creates a systematic, actual, and accurate picture of the relationship between the variables studied, tests hypotheses, and obtains the meaning and implications of the problem being studied. This research was conducted using analytical descriptive method with a quantitative approach. Primary data was obtained by distributing questionnaires with 385 respondents as samples, using an online survey. The questionnaire was analyzed to determine the effect of the Technology Acceptance Model on Purchase Intentions in online marketing through the moderating role of trust, security, and risk from respondents. The object of this research is online shopping users in Indonesia. For this research, it is hoped that by adding the variables of the role of trust, security, and risk as moderators of the research variables, this research will obtain deeper and comprehensive results on consumer purchase intentions for online marketing shopping.

2.5. Indicators

This research uses consumer behavior indicators by applying the Technology Acceptance Model which consists of Perceived Usefulness and Perceived Ease of Use; trust; risk (Perceived risk) and security as moderators in forming the Intention to Reuse Online Media for shopping.

The Online Shopping Behavior Model is important in this research to contribute to the development of the Theory of Consumer Behavior in Online Shopping, as material for decision-making regarding Sources of Foreign Exchange Income from Online Marketing activities, and Managerial Execution in the Development of Online Marketing Strategies. TAM was found to be able to provide rational consumer explanations for internet media users' intentions to shop.

2.6. Population and Samples

The population in this research is all consumers who use the Internet to shop online. Samples were taken using a non-probability sampling technique because the characteristics of population elements cannot be known with certainty using the purposive sampling method. Determination of the Purposive method is considered to be close to sampling that approaches the representativeness of the sample from elements of the population with the criteria: Consumers purchase Products or Services or Brands through the use of the company's Online Marketing media (Blibli.com, Tokopedia.com, Bukalapak.com, and Beribenka.com, Shopee .com, or other online product marketing sites) either via smartphone or other media (PCs and laptops). The minimum number of samples that will respond to the questionnaire is 385 respondents, according to the sample requirements with the SEM model [34].

2.7. Models Analysis and Variable Measurements

Data analysis uses the Structural Equation Modeling (SEM) analysis model. SEM is an appropriate analytical model for testing the development of new models and complex constructs, using the Lisrel Application [34]. The SEM model applied in this research uses a two-stage approach, namely (1). Model Fit Measurement: (2). Measurement model specifications for hypothesis testing [35], by including error measurements and variance constructs [36][37]. The variable measurements in this research adopt variable measurements developed by previous research.

3. Results and Discussions

3.1. Data Collection

This research data collection was carried out in one period. Data was collected over three months, from early July to late November 2023 for full pilot instrument testing. Test the validity and reliability of the research instrument as a whole, even though the data has been tested and the data shows that it is valid and reliable, it is necessary to test the empirical model proposed in this research with a full pilot instrument test. Data collection was carried out in two ways, namely through online and offline surveys.

Online surveys are the distribution of questionnaires to respondents using a network that places questionnaires on website pages, by asking mailing list members, contact links to friendship emails, and contact links to members of the social site Facebook, while offline surveys are direct surveys by conducting questionnaires. By meeting respondents who meet the criteria and respondents filling in indirectly if it is really necessary. The questionnaire was filled out and then an interview was conducted to confirm the questions related to the respondent's profile and the questions answered with question value four (4) which had a neutral meaning. The number of questionnaires collected from online surveys was 272 and 113 from offline surveys, bringing the total number of questionnaires collected to 385.

3.2. Respondent Characteristics

Research has been conducted on all 385 customers on online shopping applications and it was found that the majority of respondents were men (75.06%) and women (24.94%), which means that customers on online shopping applications are dominated by males. This is slightly different from the general opinion that women prefer shopping online compared to men. This also contradicts the findings of [37] which states that women make online purchasing decisions more quickly due to the influence of feminine feelings and are more sensitive when seeing advertisements on online media and buy online more often, namely 26 times compared to men who only buy 14 times a year is denied.

The majority of respondents in this study are married (78.45%) while the rest were not married (21.55%). Based on age, it is known that those aged 23-28 years occupy the highest level (49.72%) means that customers on online shopping applications are dominated by those aged 23-28 years old or the millennial generation. This is in line with data according to [67][5][68] states that the number of internet users in Indonesia in 2022 will be 49.52% aged 19-34 years and 26.48% of people use the internet more than 7 hours per day. This is in line with research by [38].

3.3. Data Normality Test

The maximum likelihood estimation method in statistical structural equation models requires requirements, including normally distributed data, free from outliers, and no multicollinearity [39]. An outlier is an observational condition of data that has characteristics that look very different from other observations and appear in extreme values, either for a single variable or a combination of

variables [34]. Analysis of outlier data is evaluated in two ways, namely analysis of univariate outliers and multivariate outliers. Evaluation of univariate outliers by converting data values into standard scores or z-scores, namely data that has a mean equal to zero and a standard deviation equal to one. Evaluation of the existence of univariate outliers is based on the z-score value with a range of ± 2.58 [34]. Univariate normality and multivariate normality testing in this research used lisrel software version 8.8. The results of the univariate normality and multivariate normality tests are shown in Table 3.1 below:

Table 3.1. Test of Univariate Normality for Continuous Variables

Indicator	Univariate Normality					
	Skewness		Kurtosis		Skewness and Kurtosis	
	Z-Score	P-Value	Z-Score	P-Value	Chi-Square	P-Value
X11	-2.933	0.003	-4.174	0.000	26.025	0.000
X12	-1.548	0.122	-3.613	0.000	15.450	0.000
X13	-7.324	0.000	-1.661	0.097	56.405	0.000
X14	-6.180	0.000	-2.953	0.003	46.918	0.000
X15	-6.300	0.000	-2.749	0.006	47.243	0.000
X16	-6.498	0.000	-2.728	0.006	49.661	0.000
X17	-5.429	0.000	-3.341	0.001	40.644	0.000
PEU	-1.481	0.139	-2.326	0.020	7.604	0.022
X21	-8.387	0.000	-0.298	0.766	70.425	0.000
X22	-4.541	0.000	-4.197	0.000	38.233	0.000
X23	-7.096	0.000	-2.018	0.044	54.428	0.000
X24	-2.241	0.025	-6.302	0.000	44.736	0.000
X25	-6.550	0.000	-2.864	0.004	51.103	0.000
X26	-4.582	0.000	-5.305	0.000	49.140	0.000
PU	-1.633	0.103	-2.476	0.013	8.798	0.012
M31	-5.373	0.000	-4.391	0.000	48.147	0.000
M32	-4.698	0.000	-4.980	0.000	46.879	0.000
M33	-6.498	0.000	-2.728	0.006	49.661	0.000
PR	-2.600	0.009	-3.632	0.000	19.952	0.000
M51	-5.463	0.000	-3.374	0.001	41.221	0.000
M52	-2.940	0.003	-3.713	0.000	22.428	0.000
M53	-4.583	0.000	-3.786	0.000	35.337	0.000
M54	-5.803	0.000	-3.649	0.000	46.988	0.000
M55	-6.941	0.000	-2.222	0.026	53.118	0.000
M56	-6.837	0.000	-2.143	0.032	51.340	0.000
ET	-4.826	0.000	-4.029	0.000	39.526	0.000
Y11	-1.456	0.145	-4.328	0.000	20.855	0.000
Y12	-5.595	0.000	-4.579	0.000	52.272	0.000
Y13	-5.543	0.000	-6.260	0.000	69.914	0.000
Y14	-5.640	0.000	-6.333	0.000	71.914	0.000
Y15	-7.805	0.000	-1.805	0.071	64.181	0.000
ATU	-1.631	0.103	-2.634	0.008	9.600	0.008
M21	-5.217	0.000	-4.125	0.000	44.236	0.000
M22	-8.366	0.000	-0.555	0.579	70.294	0.000
M23	-6.211	0.000	-3.693	0.000	52.209	0.000
ES	-3.755	0.000	-4.576	0.000	35.041	0.000
Y31	-3.569	0.000	-4.022	0.000	28.915	0.000
Y32	-3.646	0.000	-4.027	0.000	29.514	0.000
Y33	-5.376	0.000	-6.434	0.000	70.295	0.000
Y34	-5.847	0.000	-6.463	0.000	75.956	0.000
NB	-2.501	0.012	-3.856	0.000	21.123	0.000

Source: Data processed by LISREL 8.8 version (2023).

Based on Table 3.1 above, the univariate data has a Z-Score value in the range of ± 2.58 and a p-value Skewness and Kurtosis > 0.05 . Thus, it can be concluded that the overall univariate data follows a normal or close to normal distribution function, is free from outliers, and there is no multicollinearity required for maximum likelihood estimation. Meanwhile, the multivariate normality test shows that the multivariate data is not normally distributed. According to [34].

The assumption of normality of multivariate data is ignored in this study because this study does not have extreme data. However, there is abnormal data in this research model. According to [34], normally distributed data is difficult to obtain, especially in research on perceptions of consumer behavior [40], and ignoring the normality of data aims to maintain the generalisability of the population and represented samples [41]. Therefore, the estimation method used to test the model in this research is the robust maximum likelihood method.

In general, the SEM analysis model produces two (2) analysis results, namely analysis results for model fit testing and SEM estimation model results for hypothesis testing, which confirm the suitability of the research model and factual data [34][35].

3.4. Data input and Model Estimation

If the maximum likelihood estimate uses the Data System File (dsf) as input data and the dsf contains an asymptotic covariance matrix, then the maximum likelihood estimate is a robust maximum likelihood estimate (Wijanto, 2008). The structural model estimation in this research uses a two-step approach. The two-step approach method is a model estimation carried out in stages, namely: (1). Estimation of the measurement model using the First Order Confirmatory Factor Analysis (1st CFA) technique is used to test indicators of exogenous and endogenous constructs., (2). Estimation of the structural model through full model analysis, namely to see the suitability of each model and the causal relationships built in the model.

3.4. Analysis Model

The data analysis model in this research is divided into two stages, namely measurement model estimation and structural equation model estimation. Obtaining good structural model estimation results is largely determined by the results of the measurement estimation model analysis.

Confirmatory Factor Analysis Measurement Model

Analysis of the first-order confirmatory factor analysis (CFA) measurement model is the measurement stage of indicators for exogenous constructs and endogenous constructs and evaluating the suitability of all exogenous construct models to find out which indicators fit the latent variable construct, then a validity test is carried out and reliability, including (1). construct validity test of each indicator and (2). internal consistency (reliability) test measuring composite reliability or construct reliability and variance extracted. All of them concluded that they were valid and reliable.

3.5. Structural Model Estimation

Structural equation modeling is a statistical technique used to build and test structural models using a combination of statistical data and qualitative causality assumptions. The first stage of analysis (1st CFA) has produced indicators forming a fit latent variable construct. The next step is to estimate the structural model through full model analysis, namely to see the suitability of each model and the causal relationships built in the model. The first stage procedure is to assess the nature of the measurement scale constructed using construct validity, construct reliability, and variance extracted for all latent variable constructs, model suitability tests (goodness of fit), and

inferential statistical tests through first-level confirmatory factor analysis or (1st CFA). The next procedure is to carry out a suitability test of the structural model to be built including absolute fit measure, incremental fit measure, and parsimonious fit measure to verify the fit model matches the data [42][43][44][34][44]. Test the goodness of fit of the structural model (overall model) that will be built as shown in Table 3.2.

Table 3.2 *Goodness of Fit Index (GOFI) Structural Equation Models*

GOFI Size	Result Value	Standard Value	Conclusion
p-value	0.18	p-value $\geq$ 0.05	good match
RMSEA	0.02	RMSEA $\leq$ 0.08	good match
NFI	0.98	NFI $\geq$ 0.90	good match
NNFI	0.99	NNFI $\geq$ 0.90	good match
CFI	0.99	CFI $\geq$ 0.90	good match
IFI	0.99	IFI $\geq$ 0.90	good match
RFI	0.96	RFI $\geq$ 0.90	good match
SRMR	0.37	SRMR $\leq$ 0.05	good match
GFI	0.94	GFI $\geq$ 0.90	good match
AGFI	0.98	AGFI $\geq$ 0.90	good match

Source: data processed by LISREL 8.8 version (2023).

Based on Table 3.2, the goodness of fit test of the structural model (overall model) shows quite satisfactory results, namely that all the goodness of fit (GOF) values used to build the structural model at this stage show a good fit.

Based on the structural estimation (overall model) contained in Figure 3.3, the following structural equation model is obtained:

Structural Equations

$$ATU = 0.24*PEU + 0.36*PU + \text{Errorvar.} = 0.40, R^2 = 0.60$$

$$NB = 0.93*ATU + 0.085*ET + 0.083*ES + 0.23*PU + 0.098*PR. \text{Errorvar.} = 0.042, R^2 = 0.96$$

Thus, from the estimation results of the structural model (overall model) contained in Table 3.3, the following hypothesis test results are obtained:

Table 3.3. Hypotheses Testing

Hypothesis	Path Analysis	Direct Effect	t-value	Total Effect	Hypothesis Decision
H ₁	PEU $\rightarrow$ ATU	0.24	2.10	0.24	Supported
H ₂	PU $\rightarrow$ ATU	0.36	1.98	0.36	Supported
H ₃	PU $\rightarrow$ NB	0.23	2.08	0.33	Supported
H ₄	ATU $\rightarrow$ NB	0.93	9.95	0.42	Supported
H ₅	ET $\rightarrow$ NB	0.85	8.82	0.89	Supported
H ₆	ES $\rightarrow$ NB	0.83	8.81	0.88	Supported
H ₇	PR $\rightarrow$ NB	0.98	12.92	0.94	Supported

Source: Data processed by LISREL 8.8 Version (2023).

3.6. Discussion

3.6.1. The Effect of Perceived Ease of Use and Perceived Usefulness on Attitude to Use

The discussion of the hypotheses in this research is the construction and relationships of the TAM model [10][12]. The attitude-belief model is exemplified by the Theory of Reasoned Action/TRA from social psychology [11]. [12] stated that technology use intentions are predicted

by PEU. Based on the research results, the PEU variable on ATU has a positive direct effect value of 0.24 and a t-value of 2.10. This means that PEU has a positive and significant effect on ATU (H_{a1} is supported).

Based on the PEU questionnaire statement at ATU, the answer to the statement with the most approval was about interaction with the clear shopping application. This is something that needs to always be paid attention to, especially in the ease of use received by customers in online-based shopping applications, which greatly affects customers' attitudes towards using the application. Things that must be considered before creating an application so that the application can be user friendly, example (1) where the application will be used; (2) definition of the main purpose of the application; (3) clear design; (4) responsive design and size; (5) multi-user and multi-device options; (6) suitable platform; (7) color to convey the message appropriately; (8) icon labels; (9) simple design; (10) feedback and evaluation. These results also support previous research showing that individuals are more likely to interact with new technology if they perceive that their interaction with the application is clear [46][47][48][25]. Meanwhile, the answer to the statement that was least agreed upon was about finding it easy to get what you need. In this case, it is not easy for customers to get their needs because they need time to consider their needs according to their expectations.

On the other hand, the convenience provided by online shopping applications makes respondents feel that online shopping applications can make their work easier in online transactions. A good system in an online-based shopping application can be seen from the speed of the system in controlling input or requests for information and the user-friendliness of the system. Online buying and selling activities, which some people think are difficult to understand, will bring overall convenience to users of online shopping applications. Users can now easily access online shopping applications anytime and anywhere so they are very flexible. The instructions for the online shopping application are clear and easy to understand so that users do not find it difficult to market their products. All the convenience felt by users will automatically bring a positive attitude to choosing to use online shopping applications as a medium for carrying out online buying and selling activities. The results of this research support research conducted by [10][49][50]. Based on the test results, showed that perceived ease of use has a positive effect on attitude to use online shopping applications.

PU is defined as "the degree to which a person believes that using a particular system will improve his or her job performance" [10]. PU has been found to have a significant effect on system use. Furthermore, the PU variable on ATU has a positive direct effect value of 0.36 and a t-value of 1.98. This means that PU has a positive and significant effect on ATU (H_{a2} is supported).

In this research, the answer to the statement that was most widely agreed upon was about using e-commerce to complete tasks quickly. So the benefits received by consumers from e-commerce are felt by consumers today.

Important benefits experienced by online shopping include (1) convenience, (2) shopping can be done 24 hours and is open every day, (3) there are promos and discounts, (4) freedom, and (5) the world feels smaller. Collectively, several empirical studies confirm the importance of PU in predicting attitude to use. For example, [10] found that PU was a highly significant predictor of attitudes toward using new technology at two different periods in the context of word processing software. [47] in a study on intentions to use spreadsheet software; [46] in a study using end users of different productivity software.

Another statement also reveals that the internet can be seen as one of the most influential technologies that change attitudes [48]. [25] stated that the more rapid development of the internet is utilized by internet-using customers, the greater the need for online-based shopping applications. This can be seen from the importance of online tourism shopping services for its users. Users who previously might have been confused about traveling for free to reduce costs have been greatly helped. According to them, online buying and selling activities become easier and faster, thereby saving time and costs and this will of course increase user performance and productivity.

All the benefits felt by users automatically lead to users continuing to use online shopping applications. The results of this research support research conducted on empirical studies conducted by [10][51][52].

3.6.2. The Effect of Attitude to Use on Purchase Intentions and E-Trust on Purchase Intentions

Behavioral Intention is an intermediary between attitudes and behavior [51]. This is the intention to act purchasing decision-making process. Behavioral intentions may appear in various forms such as a predisposition to purchase a product/service for the first time or a commitment to purchase again. Meanwhile, e-trust research can be defined as a set of beliefs held by online consumers about certain characteristics of e-suppliers [53][54], show that e-trust drives online purchases and influences customer attitudes towards purchases from e-retailers.

[55] explained that the behavior of accepting and using technology has a significant effect on behavioral intention and use behavior. Based on research results, the Attitude to Use (ATU) variable on purchase intention has a positive direct effect value of 0.93 and a t-value of 9.95. This means that Attitude to Use (ATU) has a positive and significant effect on purchase intention. The effect of variable testing statistically strengthens the relationship between Attitude to Use (ATU) and purchase intention (Hypothesis supported).

In this research, the answer to the most agreed-upon statement about ET is to I rely on online shopping websites. The reasons are (1) believe that using online travel shopping can save time and energy, (2) get lots of promotions, (3) get more payment options, (4) have a complete variety of services, and (5) can compare prices. Meanwhile, the answer to the least agreed statement about ET is that I believe the claims and promises on online shopping sites. The reason is that sales partners make prices unreasonable and in the end, this will harm potential consumers and harm the company's reputation.

Many internet users avoid purchasing online due to privacy and security concerns [27]. [56] added several reasons for potential tourists to switch to other online tourist shopping applications. These reasons include price (such as high prices and price increases), inconvenience (such as location and time of service), service failure (such as being rude, or not caring), service errors (such as incorrect billing), responses to service errors (such as negative responses), competition (such as there are better competitors), ethical issues (such as lying, conflict of interest), other reasons for moving (such as customers moving and service providers going bankrupt).

Starting from hesitation to send personal information via the Internet [57]. Although online tourism applications continue to grow and become more sophisticated [14], they have not resulted in dramatic changes in how consumers purchase products and services [25] Meanwhile, [49] stated that around half of Internet users have purchased products or services via the Internet. Although the Internet is an important tool for information searches and product purchases, most consumers use multiple channels in their decision-making processes. 60% of online information seekers end up purchasing offline and in the tourism industry, 68% of online-based travel applications buyers do not purchase via the Internet but use multiple channels to purchase their tourism products [58].

3.6.3. Effects of Risk on Purchase Intentions

The more frequently customers use the Internet, the more likely they are to become shoppers [59]. [60] found that online ordering takes more time than offline ordering. Users often search for travel services online to compare travel prices [61]. In this research, online shopping is defined as customers placing orders for online shopping.

Important steps needed to be taken to retain potential tourists, especially in online-based shopping applications, are (1) product quality is the main thing, the image display must match the original, especially when using online-based shopping applications (2) pay attention to service before and after the transaction, continue to build communication good to potential consumers regarding the product, (3) asking for customer input regarding the product, either asking for

testimonials or asking for a consumer satisfaction survey, (4) handling consumer complaints well, (5) utilizing technology to build communication, sending the latest information via WhatsApp, Line, SMS, Email, etc. (6) provide offers for customers, (7) create activities with customers such as regular bazaar events [62].

From the explanation above, it can be seen that all the hypotheses that have been tested prove that customers are influenced by online shopping accessibility services. The industrial era 4.0 also proves that the old conventional ways of traveling are starting to be abandoned because of the variety of online shop apps and the availability of strong Wi-Fi and 4G signals. Industry 4.0 proves that the Internet of Things (IoT) is changing old ways of traveling with new ones, new generation tourism, namely millennial customers. Online-based shopping applications, including all types of facilities and infrastructure that support them, certainly support and are in line with the Government Regulations of the Republic of Indonesia. This is proven by the emergence of social media, which also influences tourist behavior, such as forms of social media such as (1) YouTube; (2) Facebook; (3) WhatsApp; (4) Instagram; (5) Lines; (6) fuel; (7) Twitter; (8) Google+; (9) Facebook Messenger; (10) Linked in. This statement explains that the development of e-commerce has brought changes to marketing strategies in various countries, including Indonesia. The use of e-commerce in industry is known as e-commerce terminology.

The benefits of e-commerce have grown very fast due to the many advantages associated with using online shopping on the internet such as efficiency, quality, and flexibility [63][26].

Furthermore, looking at the data in Indonesia, there have been 143.26 million internet users out of a total population of 262 million people. This figure also shows that the number of internet users is 49.52% aged 19-34 years (millennial generation) and 26.48% use the internet more than 7 hours per day. The characteristics of online shopping in the millennial generation revealed that 64% of millennial netizens shop online. Most of the millennial generation in this study are married.

In addition, this data states that the proportion of the future generation of online service users is 31.1% Generation Y (millennials, with a birth year range of 1981-1994) as of 2020 and 29.6% Generation Z (all internet, with a birth year range of 1995 -2010) per 2035. Another thing that is supported by the results of the recapitulation of the characteristics of respondents in this research, customers on online shopping applications are dominated by men as much as 53.82%, 73% are married, the age of the millennial generation or in the range 23-28 years old as much as 49.72%. The increasing age of each person is one of the factors that influences the shift in consumer age ranges. Today's consumers are dominated by the millennial generation.

If online-based shopping businesses start to look at and make this millennial generation their target market. The consumer culture possessed by this generation is also an advantage for business people to increase business income. On the other hand, facts show that the millennial generation has an attention span that tends to be short. This is certainly a challenge for a marketer to be able to create an effective marketing strategy to capture the attention and win the hearts of customers.

3.6.4. The Effect of E-Security on Purchase Intentions

The security factor is also very important to pay attention to because before making a transaction, consumers are required to create an account on the online buying and selling site first. When creating an account, users must include personal data in the form of their full name, cellphone number, email, or other information. The requirement to register by including personal information sometimes makes some people reluctant to do so. Opening business transactions via the Internet does not mean avoiding crime by other parties as with conventional transactions. The potential for crime in the form of fraud, credit card hijacking, and the like is very large if the security system (e-security) of E-commerce infrastructure becomes an important and serious study for computer and informatics experts [64]. The security that e-commerce provides to consumers is guaranteed and for the transactions themselves, e-commerce has also collaborated with bank partners who can be trusted and has been standardized by Bank Indonesia and the Financial Services Authority. Security itself is the online shop's ability to monitor and safeguard data

transactions carried out by consumers. "This security guarantee is very important because it can increase trust and eliminate consumer perceptions about the misuse of personal data and transaction data that is easily damaged," [65]. Security is a condition where a consumer can prevent fraud or can know in advance that fraud has occurred in an information-based system, where the information has no physical meaning [66].

4. Conclusion

Perceived usefulness positively affected consumer attitudes, perceived ease of use positively affected consumer attitudes, perceived ease of use positively affected purchase intentions, perceived ease of use affected purchase intentions strengthened by perceived risk, consumer attitudes positively affected purchase intentions, attitudes affected purchase intentions strengthened by security, and attitudes affected purchase intentions strengthened by e-trust.

For the Convenience (PEU) variable, it is recommended that online shopping applications be user-friendly, have clear display design, be responsive, has multi-user and multi-device features, appropriate platforms, colors to convey messages appropriately, icon labels, simple design, feedback, and evaluation. For the Usability (PU) variable, it is recommended that online shopping applications be made comfortable and allow shopping to be done 24 hours, open every day, and save time and costs. For the Attitude variable (ATU), it is recommended for applications to create effective marketing strategies to capture customer attention. For the variables, Trust (ET), Security (ES), and Risk (PR), the management of the online shopping application is not to increase prices, good service, response to failure of good service, wrong billing, wrong service, and ethics.

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