

ANALYSIS OF UI/UX DESIGN IN E-COMMERCE ONLINE LOAN SERVICE THAT AFFECTS USER'S DECISION

TANTY OKTAVIA¹, MARVELLA GUNAWAN², GLORIA PREYSILIAN EMOR³, GLADYS
PATRICIA⁴, LISA POLIMAN⁵, MAUREEN VALERIE⁶

¹Information System Management Department, BINUS Graduate Program, Master of Information System Management, Bina Nusantara University, Jakarta, Indonesia, 11480

^{2,3,4,5,6}Information Systems Department, School of Information Systems, Bina Nusantara University, Jakarta, Indonesia, 11480

¹toktavia@binus.edu, ²marvella.gunawan@binus.ac.id, ³gloria.emor@binus.ac.id
⁴gladys.patricia@binus.ac.id, ⁵lisa.poliman@binus.ac.id, ⁶maureen.valerie@binus.ac.id

ABSTRACT

Online loan (also known as peer-to-peer lending) is a type of internet finance that is primarily used to meet the financial needs of small and medium-sized businesses as well as groups of individuals because of the large number of online loan applications that are currently being developed, each application has a distinct feature to emphasize in order to attract application users. In the previous research there are not specifically focus on the design of the application. Most of them prefer to describe functionality approach. Therefore, this research is to determine whether the design of the user interface and user experience influences user interest in using online loan applications. Including the main factors influencing lender trust, user decisions, and the impact of these factors on loan intentions. An online questionnaire was developed and disseminated to collect data from respondents within the scope of online loan users in Jakarta with different ages, gender, occupation, and experiences. After the usable data are collected, it is analysed through the SMART PLS (Version 4) software using the Partial Least Squares – Structural Equation Modelling (PLS-SEM) method with the objective of testing the hypotheses. The result from 120 qualified respondents shows that among the 5 existing variables, only Speed of Loan Approval (SL) have significant effect on User Interest (US) in customer's interest to use the online loan service in E-Commerce applications.

Keywords: *P2P, online loan, SMART PLS-SEM, User Interest, User Acceptance, Decision*

1. INTRODUCTION

In this digital era, online loans are increasingly prevalent. Previously, the process of borrowing money could only be done through banks, insurance, or loan sharks, but now it can be done digitally through websites or applications. Peer to peer (P2P) lending is a type of Financial Technology (Fintech) and according to the website of Financial Services Authority (OJK) P2P defined as an innovation in the financial industry that uses technology for operational processes. Fintech P2P lending has started to develop in England since 2005, but in Indonesia it just started developing in 2015 [1]. Indonesia uses a lending system that forms various

countries and adapts it to the prevailing business processes around it. This means that increasingly modern information technology has been used to develop the financial industry in Indonesian society, this can be seen from the increasing distribution of funds from year to year. The high public interest can be seen based on OJK data from 2018 to 2021 in Figure 1, the number of loans disbursed every year increases in 2018 reached IDR 22.67 million, in 2019 it increased to IDR 81.5 million, in 2020 it increased to IDR 155.90 million, and in 2021 it was recorded as having reached IDR 295.8 million [2].

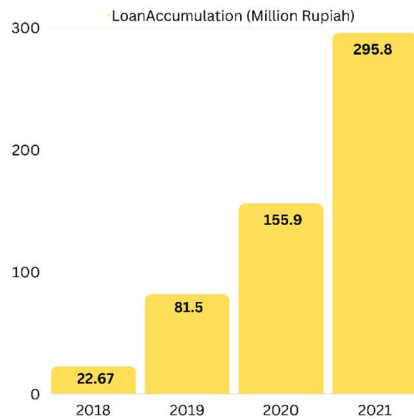


Figure 1: Accumulated loan amounts in Indonesia for the 2018-2021 period [2]

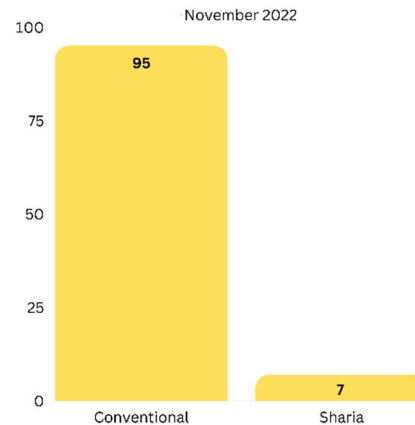


Figure 2: P2PL legal platforms [3]

To provide protection for these transactions, it is necessary for the Financial Services Authority (OJK) to further regulate this matter which is then set forth in the Financial Services Authority Regulation (POJK) No. 77/POJK.01/2016 concerning Information Technology-Based Money Lending Services. From the data on the Financial Services Authority (OJK) website in figure 2, it showed there are 102 registered legal loans with 95 conventional and 7 sharia [3]. Beyond that, there are still many illegal loans that have not been identified. In the records of the Indonesian Joint Funding Fintech Association (AFPI), 60% of the majority of loan users are young people aged 19-24 years. This age range tends to be technologically literate since they are used to technology. According to the 2021 edition of the State of Finance App Marketing Report, Indonesia has become the third country with the most installation of financial applications among 15 other countries.

With the emergence of various loan applications, E-Commerce applications such as *Tokopedia* and *Shopee* have implemented their own loan services as well. To compete with various P2P lending applications, these e-commerce applications have their own way to encourage users in using their loan services, which is through offering unique experience to their users. Their uniqueness is obtained in several ways, one of which is by creating a distinctive User Interface and User Experience. User interaction is influenced by 2 elements contained in user interface design, namely aesthetic design or designs that are seen directly and information design in which information is displayed in a format that is easy for users to understand and read [4]. By this definition, e-commerce applications are creating an UI and UX that keeps attracting their users to their loan services. For example, in *Shopee*, there are pop-ups regarding offers to use their loan service, *S Pinjam*. They are also utilizing logos and call to action messages variously across their application. The design of an e-commerce interface can affect online buyers' trust in sellers [5]. Through a good UI, UX, and a well-known brand image, it is speculated that users will be more interested in making a loan as they will gain a sense of trust. Therefore, this paper intends to analyze how the UI/UX in E-Commerce applications such as *Tokopedia* and *Shopee*, in which have a money lending feature can influence a user's decision to make an online loan.

2. LITERATURE REVIEW

A. Financial Technology (Fintech)

Fintech describes a business that aims at providing financial services by making use of software and modern technology. FinTech works by combining technology with finance. Companies use FinTech to enhance the process of financial service, which provides an improved and automated financial system (McAuley, 2015). Prior studies of FinTech have mentioned the benefits of FinTech adoption, such as cost reduction, high efficiency, rapidity, innovation, flexibility and improvement in the business processes. In addition, FinTech has helped in disintermediation [6] and provided online platforms for trading, lending (crowdfunding and peer-to-peer, P2P) and asset management [7].

In Indonesia, Fintech is widely recognized by the public, one of which is the Information Technology-Based Money Lending and Borrowing Service. Regarding fintech lending and borrowing, it has been regulated in the Financial Services Authority Regulation Number 77/POJK.01/2016 concerning Information Technology-Based Borrowing and Borrowing Services. Pasal 1 Angka 3 POJK 77/POJK.01/2016 states that Information Technology-Based Borrowing and Borrowing Services is the provision of financial services to bring together lenders and loan recipients in the context of entering into loan agreements in the rupiah currency directly.

B. Peer-to-Peer (P2P) lending

Peer to peer lending is the practice or method of lending money to individuals or businesses and vice versa. Peer to peer lending is a product of financial technology that brings together lenders and borrowers through electronic systems or information technology. Peer-to-Peer Lending provides credit and risk management mechanisms. P2P lending helps lenders and borrowers meet their individual needs and make efficient use of money. In this way, it eliminates the intermediation function that has been carried out by banking institutions in Indonesia. P2P Lending has become fast-growing American investment markets with growth of more than 100% year to year. Several Asian countries include

Indonesia show that P2P Lending is a Fintech sector that is growing rapidly from other sectors [8].

C. User Interface

User Interface(UI) is part of the system that acts as an intermediary between users and facilitates users to interact with the system efficiently [9]. User Interface has been recognized as one of the most critical elements of a software project, and it has been estimated that as much as 48% of the project work goes into the design and implementation of the user interface [10].

A research explains that the user interface is the way users and systems interact [11]. Thus, user interface design is an interface design in graphical form that can display how users interact with the system. Based on this understanding, user interface design will help the audience to understand how to use and how an application works before the application is finished. User interface design has an important role in making an application, in addition to presenting the appearance of an application, user interface design also shows the flow and way of working of the application. The importance of Human-Computer Interaction (HCI) shows that at least 50% of the program code is devoted to the User Interface.

D. User Experience

User Experience is the attitude, behavior and emotions of the user when using a product, system or service involving individual perceptions related to perceived benefits and conveniences obtained. User Experience (UX) refers to the overall designation of how people have experienced periods dealing with a system from beginning to an end. This view emphasizes user outcomes and recalls rather than their dynamic nature [12]. Another opinion states that User Experience (UX) increases user satisfaction, pleasure, needs, and engagement with the interaction of a product made. User Experience (UX) is concerned with studying, designing, and evaluating the experiences people have through using (or encountering) a system [13].

To get a good User Experience, a product must have compatibility between product features and user needs. This is what then determines whether the

product is valuable or valuable. Next, if the product is easy to find and easy to use the first time, then the product can make users feel good when using it. And the last thing, the product must be easy to use to get things done or do what the user wants.

E. PLS-SEM

Testing the research hypothesis was carried out using the Partial Least Square (PLS) based Structural Equation Model (SEM) approach. PLS is a component- or variant-based structural equation model (SEM). Structural Equation Model (SEM) is a field of statistical study that can test a series of relationships that are relatively difficult to measure simultaneously. According to Kaplan, SEM is a multivariate analysis technique which is a combination of factor analysis and regression (correlation) analysis, which aims to test the hypotheses between variables in a model [14].

According to Yulianto [15], PLS is an alternative approach that shifts from a covariance-based SEM approach to a variant-based one. Covariance-based SEM generally tests causality or theory while PLS is more of a predictive model. However, there is a difference between covariance-based SEM and component-based PLS in the use of structural equation models to test theories or develop theories for prediction purposes.

3. RESEARCH METHODOLOGY

The research method used is a qualitative method. This method uses inductive or bottom-up reasoning. Qualitative methods are inductive, meaning that research begins with preliminary observations or field observations and data collection and ends with drawing conclusions.

In addition, to obtain primary data, this research was carried out by distributing questionnaires to application users to provide loan services online, which would later be shared on various platforms to collect large amounts of data. Then the data will be processed into data that can be used to support analysis. Data collection techniques used in this study are:

1. Observation

At this stage, studying or observing phenomena or problems that occur in the community through social media platforms regarding user behavior based on user experience in E-Commerce applications with online loan features.

2. Questionnaire

Questionnaires are used to obtain information or data from respondents based on written questions regarding reports related to certain problems that they know [16]. Questionnaire indicators are made in accordance with the provisions of the Usability Testing method and the User Experience Questionnaire (UEQ). For the target population, e-commerce users in Indonesia will be taken in 2022. According to Indonesian data, there are 158 million Indonesian e-commerce users. The result of the Slovin's formula for this population with an error of 10% is 100.

A. Research Model

User interest in online loan applications refers to the user's level of interest or involvement in using online tools or platforms to apply for and manage loans. This can include searching for loan options, comparing interest rates and terms, filling out and submitting loan applications, and tracking the status of loan applications and existing loans. User interest in online loan applications can be influenced by several factors, such as security in making loans, speed, and efficiency of the loan application process, ability to pay, and the need to make loans. In addition, online lenders with good reputations, reliability, and customer service may have more user interest.

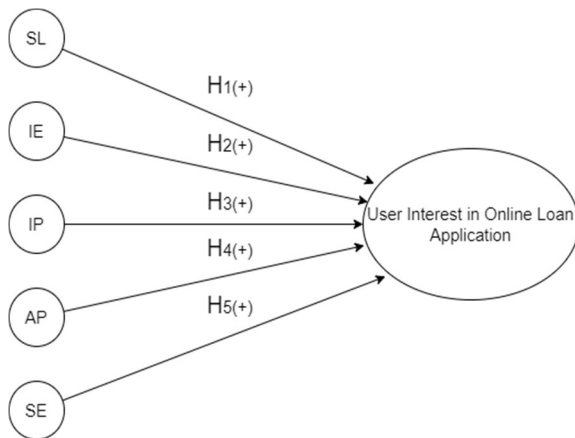


Figure 3: Research Framework

SL: Speed of Loan Approval
 IE: Improved Effectivity
 IP: Increased Productivity
 AP: Ability to Pay
 SE: Security

Hypothesis:

The hypothesis is a temporary answer to the formulation of a research problem stated in the form of a sentence. The hypothesis is as follows:

- **Speed of loan approval (SL)**

A fast and easy process is the strategy offered by every online loan application. Response speed has a positive effect on user interest [17]. If the online loan system is easy to use, it will attract more interested people users. Then, the ease of use of the application will influence purchasing decisions. Terms that are easy to agree on for the loan process will impact interest in using it. Subsequent research also shows that variable credit needs directly affect customer interest [18]. Thus, the hypothesis is formulated as follows:

H1: Speed of loan approval through excellent UX has a positive impact to the user's intent to use online loan service in E-Commerce.

- **Improved effectivity (IE)**

Effectiveness is the extent to which goals can be realized to see how far

the individual can reach the desired level. The effectiveness of influencing interest in transactions using fintech [19]. Someone uses fintech to achieve the desired goal, for example when a student needs goods and the installment party provides loan facilities, it means that the student's goal has been achieved to make a loan. Effectiveness can be achieved when students feel the benefits that will be obtained quickly.

Then the researcher formulates the hypothesis as follows:

H2: Improved Effectivity caused by excellent UX and UI has a positive impact to the user's intent to use online loan service in E-Commerce.

- **Increased productivity (IP)**

Productivity is the comparison between the results achieved, and the overall resources used [20]. The use of fintech services will support users to increase productivity because these services have a fast response, are not constrained by distance, and transactions do not take long by utilizing the internet network, so they can help increase productivity.

In addition, performance expectations positively affect interest in using the system [21]. Interest in using the system can be gained by convincing those interested in using it that using fintech will increase their productivity. When the application of lender services guarantees this, interest in using fintech will also increase.

Then the researcher formulates the hypothesis as follows:

H3: Increased productivity caused by excellent UX has a positive impact on the user's intent to use online loan service in E-Commerce.

- **Ability to pay (AP)**

The ability to pay is the ability to perform when making transactions to exchange

services and goods. In this case, behavioral control in the theory of planned behavior assesses the ability to pay, influencing the intention to use. Someone going to make a loan must pay attention to their ability to pay and bear the costs arising from the loan. In fulfilling the ability to pay the necessary behavioral control. In this case, distinguish between wants and needs. Control relates to the individual's ability to fulfill personal desires. A person's income reflects the ability to borrow to repay the loan in the future.

So that it can be concluded that the ability to pay is also an influencing factor in the interest of users to make loans.

H4: Ability to pay has a positive impact to the user's intent to use online loan service in E-Commerce.

- **Security (SE)**

Security is something that is absolutely provided by business people, both products, services, and both. In the TPB theory, there is the intention which means interest, this makes security a factor that consumers consider to make choices [22]. Security provides comfort.

to users and increases user trust, which leads to increased sales volume. Security services are a priority that can be seen by other people to determine interest in a service. All lending and borrowing mechanisms are through fintech Peer to peer lending.

(P2PL) is conducted using an electronic database. As is known, electronic data systems are still prone to leaks [23]. So that it can be taken that security is a factor in user decision making to make online loans through e-commerce applications.

H5: Security has a positive impact to the user's intent to use online loan service in E-Commerce.

B. Mapping Variable

The independent variable is a variable that can be a factor influencing the dependent variable. In this study there are 5 independent variables namely speed loan approvals, increase effectiveness, increase productivity, ability to pay, and security. Independent variable indicators are in table 1.

Table 1: Independent Variable

Variable	Indicator	Definition	Literature	Code	Statement
Speed of loan approval (SL)	Get a loan	It's easy to get loans online	(Bellami, 2018), modification	SL1	The UX in the E-Commerce application with the online loan feature allows me to get a loan faster
	Verification	Faster account verification	(Yulianti, 2008), modification	SL2	The UX of the E-Commerce Application with the online loan feature makes me think that the execution of account verification transactions is faster
	Response	quick response	(Yulianti, 2008), modification	SL3	E-Commerce applications with online loan features can provide quick responses when you need more information
	Management process	Easy and timely management process	(Situngkir, 2008), modification	SL4	The UX E-Commerce Application with online loan

Variable	Indicator	Definition	Literature	Code	Statement
					features makes it easier for me to take care of loans because the process is easy and timely
Improved Effectiveness (IE)	Effectiveness	Increase effectiveness	(Kusbiyanti, 2017), modification	IE1	UX and UI The online loan application made an impact on my goals
	Functionality and usability	Selection based on function and usability	(Hidayat, 2019), modification	IE2	The UI of the online loan application displays various functions and uses in purchasing goods and services that I will buy
	Needs/wants	Choice between needs and wants	(Hidayat, 2019), modification	IE3	For me, borrowing money based on my needs will take priority over borrowing money for what I want
	Needs	Fulfillment	(Situngkir, 2008), modification	IE4	I use E-Commerce with online loan features because it allows me to meet my needs

Variable	Indicator	Definition	Literature	Code	Statement
Increase Productivity (IP)	Productivity	Productivity improvements	(Rahmawati, 2016), modification	IP1	UX in E-Commerce with online loan features increases my productivity
	Finance	Ability to manage finances	(Uun, 2019), modification	IP2	The online loan feature UI helps improve my ability to manage finances
Ability to pay (AP)	Cost	Appropriate financing	(Hidayat, 2019), modification	AP1	I feel that by using the E-Commerce application with this online loan feature, the fee I need can be obtained
	Ability	Good paying ability	(Fajar, 2013), modification	AP2	I have good paying ability with the help of UI in using online loan applications
	Willingness	Willingness to pay	(Fitra, 2019), modification	AP3	E-Commerce applications with online loans provide a UI that displays various benefits that increase my willingness to pay
	Timely payment	On time in making payments	(Dhira, 2017), modification	AP4	The application UI helps me make payments on time,

Variable	Indicator	Definition	Literature	Code	Statement
					namely according to the time given while using the online application
	Period of time	Long loan term	(Tami, 2012), modification	AP5	The UI and UX of the E-Commerce application with the online loan feature help me make payments due to the long period of time given
Security (SE)	Guaranteed deposited money	Believe that the money stored in electronic devices is guaranteed at the time of the transaction	(Waspada, 2012), modification	SE1	E-Commerce applications with online loan features can provide high security guarantees
	Protection of information	Trust will get protection for the information provided	(Waspada, 2012), modification	SE2	I may not worry when using online loan services
	Safe place to make loans	Believe that online loans are safe places to make loans	(Cheng et al., 2006), modification	SE3	In my opinion, E-Commerce is a safe place to use as an alternative to loans

Variable	Indicator	Definition	Literature	Code	Statement
	Security level	Security level as expected	(Arisanto, 2010), modification	SE4	The security level of online loan services may have met my expectations
	Data security guarantee	Security guarantee for data information	(Saputri, 2015), modification	SE5	I feel that E-Commerce with online loan features can provide guarantees for data information

The independent variables in this study consist of Speed of Loan Approval (SL), Improved Effectiveness (IE), Increased Productivity (IP), Ability to Pay (AP), and Security (SE). Each variable is made with supporters that are used to get the desired results. The dependent variable is a variable that is influenced by independent variables. A variable dependent in this study is user interest. The dependent variable indicator is in table 2.

Table 2: Dependent Variable

Variable	Indicator	Definition	Literature	Code	Statement
User Interest (US)	Interested	The level of user desire to use the system	(Cheng, 2014) modification	US1	I am interested in making money loans online
	As urgent need	Effect of using the system due to the situation	(Ajeng, 2019) modification	US2	I will use an online money loan application/website if I have an urgent need
	Attractive quality of service	User interest in using loan services	(Ainun, 2015) modification	US3	I may be interested in using online loans because of the attractive quality of

Variable	Indicator	Definition	Literature	Code	Statement
					borrowing services
	Plans for future use	The user plans to continue using the system	(Uun, 2019), modification	US4	I plan to apply for an online loan to make loans in the future

primarily due to its writing style. Extensive research has shown that accessible reading texts improve comprehension, retention, reading speed, and task persistence. Ease of reading is the result of the interaction between the text and the reader. Therefore, the readability test is used to find out whether the audience can understand each question in the questionnaire.

C. Research Time And Object

This research was conducted from October 2022 to January 2023. The target population for this research is the number of e-commerce users in Indonesia, this number is not specifically known but based on Indonesian web data [24]. the number of e-commerce users in Indonesia in 2022 is around 168 million. This sample There is no age or gender restriction of the respondents.

D. Questionnaire

This research uses a non-probability technique, convenient sampling, to gather the sample from the research population. Convenient sampling is a method to collect respondents from a target population that meets specific criteria such as reachable and agrees to participate in the research [25]. It was because it does not need much resource and the process tends to be faster. The number of samples for this study was determined using the slovin formula. The Slovin’s formula is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

n = 158.000.000/1 + 158.000.000(10%)²

n = 99,999 respondents

n=100 respondents

So that it can be seen from the results of the calculations obtained, it is necessary to get around 100 respondents in conducting this research.

E. Readability Test

The readability test is a measure of the ease with which readers can understand written text,

Table 3: Readability Test

	Question	Yes	No
1	Have you ever made an online loan through an E-Commerce application (Tokopedia, Shopee, Bukalapak, etc.)?	V	
2	Gender	V	
3	Age	V	
4	Profession	V	
5	Your current domicile	V	
6	Your Last Education	V	
7	How many times have you made online loans?	V	
8	Loans in what e-commerce applications have you used?	V	
9	Where did you find out where the loan was?	V	
10	What loan range do you borrow?	V	
11	The duration required to make an online loan	V	
12	How long do you usually take in online loans?	V	
13	How many of your acquaintances make online loans?	V	
Speed of loan approval (SL)		Yes	No
14	UX in the E-Commerce application with online loan features allows you to get a loan quickly	V	
15	Verification of the implementation of the transaction provided is very fast	V	
16	The application's response to the information you need is	V	

	Question	Yes	No
	relatively fast. The application's response to the information you need is relatively fast		
17	Is the processing process that applies to making a loan on the application relatively fast	V	
Improved Effectiveness (IE)		Yes	No
18	How much influence the UX and UI of online loan applications have had an impact on my goals	V	
19	UI The online loan application displays its various functions and uses in the purchase of goods and services that I am going to buy	V	
20	For you, borrowing money based on your needs will prioritize over borrowing money for the thing you want	V	
21	I use an E-Commerce application with online loan features because it allows me to meet my needs	V	
Increased Productivity (IP)		Yes	No
22	The UX at E-Commerce with online lending features increased my productivity.	V	
23	UI online Loan feature helped improve my ability to manage finances.	V	
Ability to pay (AP)		Yes	No
24	You feel that in using the E-Commerce application with this online loan feature, you can get the fee you need	V	
25	You have good paying ability with the help of UI in using online loan applications	V	
26	E-Commerce with online loan features provides	V	

	Question	Yes	No
	a UI that displays various benefits that increase your willingness to pay		
27	The application UI helps you make loan payments on time, namely according to the time given while using the E-Commerce application	V	
28	The UX of the E-Commerce Application with the online loan feature helps you in making payments due to the appearance of the UI regarding the long term given	V	
Security (SE)		Yes	No
29	You feel that the E-Commerce application that you are using does not guarantee high security	V	
30	You feel your personal data in the E-Commerce application with online lending features is not safe	V	
31	In your opinion, E-Commerce is a safe place to use as an alternative to loans	V	
32	The level of security of E-Commerce services with online loan features meets your expectations	V	
33	You feel E-Commerce with online loan features can provide guarantees for personal data information	V	
User Interest (US)		Yes	No
34	Are you interested in making money loans online?	V	
35	You will use the online money loan feature if you have an urgent need	V	
36	You are interested in using online loans because of the UI of the E-Commerce application with attractive borrowing features and easy UX	V	

	Question	Yes	No
37	You plan to use the online loan feature in the E-Commerce application to make loans in the future	V	
Open Question		Yes	No
38	Have you ever had trouble using the E-Commerce online lending feature?	V	
39	What difficulty is that?	V	
40	What E-Commerce application do you use most often to borrow money?	V	
41	What is your reason for choosing the application?	V	
42	What do you think can be developed from the E-Commerce Application that you use?	V	

Demographic		Frequency	Percentage
Gender	Male	55	48%
	Female	60	52%
Age	17-20	30	25%
	21-30	36	30%
	31-40	36	30%
	41-50	13	11%
	>50	4	3%
Occupation	Student	10	29%
	Private Sector Employee	9	26%
	Housewife	8	23%
	Entrepreneur	8	23%
Experience	1	16	44%
	2	14	39%
	>2	6	17%

F. Demographic

After two months of collection, namely from November 2022 to January 2023, data through distributing questionnaires, a total of 167 respondents were obtained. However, 47 respondents stated that they had never used the loan feature in e-commerce applications in Indonesia. Therefore, only 120 respondents provided relevant data for analysis. Using the slovin's formula with an error rate of 10%, the number of valid respondents is still sufficient because the calculation produces a minimum of 100 respondents. Table 4 presents the demographics of the eligible respondents.

Table 4: Respondents Demographic

4. RESULTS AND DISCUSSIONS

The data collected through questioner spreading are extracted in excel format and filtered afterward. After the usable data are collected, it is analyzed through the SMART PLS (Version 4) software using the Partial Least Squares – Structural Equation Modelling (PLS-SEM) method with the objective of testing the hypotheses. The reason of the PLS-SEM method usage is because PLS-SEM is an acknowledged method within Information System, especially when the research ambition is to reach a prediction conclusion [26]. According to Wong, there are 2 main structural equation models. The first one being the outer model or also known as the measurement model, this model focuses on describing the correlation between the indicators and latent variables. The second one is called the inner model or known as the structural model, this model describes the correlation between the dependent and independent latent variables [27].

A. Outer Model (Measurement Model)

Outer models are essential because the validity and dependability of the links proposed in the inner model depend on them [28]. The purpose of doing the test is to find out the validity of the data from

several tests needed, namely Convergent Validity testing to find out whether the respondent can understand the statement given the same as the researcher, besides that there is a Discriminant Validity test to find out that the respondent's answer to the variable is not disturbed due to the perception of the previous variable. In addition to these two tests, there is a reliability test Cronbach Alpha and Composite Reliability to find consistent value measurement results.

Table 5: Convergent Validity Based on Outer Loading

Indicator	Outer Loading/ Loading Factor		Indicator	Outer Loading/ Loading Factor	
	1st Test	2nd Test		1st Test	2nd Test
SE1	0.641	-	SL3	0.827	0.825
SE2	0.634	-	SL4	0.795	0.796
SE3	0.777	0.798	IE1	0.767	0.807
SE4	0.821	0.877	IE2	0.701	0.741
SE5	0.806	0.865	IE3	0.693	-
AP1	0.836	0.911	IE4	0.772	0.802
AP2	0.841	0.883	IP1	0.875	0.879
AP3	0.652	-	IP2	0.926	0.924
AP4	0.663	-	US1	0.804	0.828
AP5	0.494	-	US2	0.656	-
SL1	0.736	0.732	US3	0.799	0.834
SL2	0.839	0.843	US4	0.732	0.737

Table 4 shows that there are several indicators that do not meet convergent validity with a loading factor value greater than 0.7 based on the PLS concept, namely SE1, SE2, AP3, A-4, AP5, IE3, and US2. Therefore, these indicators are declared invalid so that each of these indicators is removed from the model to carry out further research in accordance with the final results described above. Further research was carried out based on the Average variance extracted (AVE) where the discriminant validity contained in Table VI shows that all values are greater than 0.5 which indicates that more than

50% of the variance of the indicators can be explained by latent variables in the average flat [29].

Table 6: Discriminant Validity Based on Fornell – Lacker Criterion

Variable	SE	AP	KP	IE	IP	US
SE	0.847					
AP	0.33	0.897				
SL	0.543	0.567	0.8			
IE	0.354	0.51	0.579	0.784		
IP	0.413	0.648	0.539	0.567	0.902	
US	0.461	0.43	0.538	0.447	0.41	0.801

The Discriminant Validity test in Table V shows that the correlation value of the variable is greater than the correlation value of other variables so that all the variables used in this study have fulfilled discriminant validity based on Fornell - Lacker's Criterion [30]. For example, the SE value for the SE variable is greater than the SE value for the AP variable. Furthermore, reliability testing will be carried out based on Cronbach alpha reliability and Composite Reliability. The variable will be considered reliable if its value is more than or equal to 0.70 where this test is carried out with the aim of knowing the consistency of the items used.

Table 7: The Value of Ave, Composite Reliability, R Square, And Cronbach's Alpha

	Average variance extracted (AVE)	Composite reliability (rho_c)	R-square	Cronbach's alpha
SE	0.718	0.884		0.804
AP	0.804	0.892		0.758
SL	0.64	0.877		0.812
IE	0.615	0.827		0.687
IP	0.813	0.897		0.772
US	0.641	0.843	0.365	0.722

Based on the results obtained from the reliability test, it is known that most of the values on Cronbach Alpha and Composite Reliability are reliable data because it is more than 0.70 as a condition that must be met [31], however there is one data that does not meet the reliable requirements because it is not more of 0.70, namely IE on Cronbach Alpha so that the data becomes unreliable.

B. Inner Model (Structural Model)

The inner model displays an ongoing evaluation of the relationships between constructs [28]. After several testing stages have been fulfilled such as reliability and validity, the coefficient of determination (R2 values) and the significant path coefficient tested become part of the main evaluation criteria for PLS-SEM. R2 is an assessment used to assess how much influence the independent variable has on the dependent variable based on the prediction accuracy of the research model. Based on Table VI. R2 in User Interest (US) is 0.365 which means SE, AP, SL, IE, IP, US can explain 36.5 percent of the variance in US in using E-Commerce applications continuously. There are 63.5 percent of variables that are not included in this research account.

Table 8: Path Coefficient And T-Statistic

Path	Path coefficients	T statistics (O/STDEV)	P values	Information
SE -> US	0.225	2.017	0.044	Significant
AP -> US	0.128	1.221	0.222	Insignificant
SL -> US	0.248	2.171	0.03	Significant
IE -> US	0.149	1.278	0.201	Insignificant
IP -> US	0.016	0.118	0.906	Insignificant

In this section, it will be known whether there is a significant effect or not by using the bootstrap analysis procedure where in this study, we used a significance level of 0.10. Assessing the significance of the data is done by looking at the value of the P values where the value will be considered significant if it is less than 0.05 [32], otherwise, if the value is more than 0.05 then the value is included in the insignificant value. Therefore, in accordance with the values presented, namely SE has a significant effect on US and SL has a significant effect on US with the direction of the positive influence of each variable which causes the value to have a positive significant effect, which means it has the same development.

C. Discussion of Results

Speed of loan approval (SL) does have a significant effect on User Interest (US) in customer's interest to use the online loan service in E-Commerce applications. Indicating that H1 is accepted. This result is in accordance with previous findings, where there is a positive impact to user interest when the time to receive loan approval is rapid or provide convenience [33]. This finding implies that the less time an user receives their approval to acquire their loan, it will influence their interest to remain using the application. As a result, E-Commerce applications should improve their User Experience (UX) in a way that will help their users to be able to find their loan services easily and implement a loan approval process with adequate servers. E-Commerce applications with loan services should utilize this finding to increase their approval speed, as it shows positive impact on user interest.

Improved Effectivity (IE) does not have a significant effect on User Interest (US) to use the online loan service in E-Commerce applications. Rejecting the second hypothesis (H2 rejected). This result indicates that through the push of excellent UX in E-Commerce applications that helps users to improve their effectiveness in finishing their lending process, it does not affect the user interest. Implying, users are less likely to pay attention to the effectivity, although it is still recommended for e-commerce applications to create an UX that is simple and easy to understand.

Increased Productivity (IP) does not have a significant effect on User Interest (US) to use the online loan service in E-Commerce applications (H3 rejected). This finding aligns with the result from prior research, where it is proven practicality and efficiency does not affect user interest strongly [34]. According to the demographic data collected, most users do not use the loan service on a day-to-day basis. 44% of the respondents have only used the lending service once, therefore productivity would not be a significant value to the users.

Ability to Pay (AP) does not have a significant effect on User Interest (US) to use the online loan service in E-Commerce applications. Indicating the rejection of H4. Based on previous research, where it is concluded borrowing decisions roots from bad credit, the result indicates it is consistent with current finding [35]. The users that are admitting themselves to use the online loan services are in need of financial help. Therefore, the ability to pay on time does not have a significant value to the users.

Security (SE) does have a significant effect on User Interest (US) to use the online loan service in E-Commerce applications (H5 Accepted). The research finding from Suroso & Wahjudi, where confidentiality of user data has a significant effect, which indicates that the result aligns with the current finding [36]. This result implies that the sense of security in data privacy will increase user interest in using the loan service. As a result, E-Commerce companies should increase their data security and invest in cyber security.

5. CONCLUSION

This study focuses on analysis of UI/UX design in e-commerce applications that affects user's decision when applying for online loans service. This research includes 5 variable that affect user interest in using online loan applications which is Speed of Loan Approval (SL), Improved Effectiveness (IE), Increased Productivity (IP), Ability to Pay (AP), and Security (SE) which shows that Speed of Loan Approval (SL) and Security (SE) gives a significant effect on User Interest. This finding implies that the less time an user receives their approval to acquire their loan, it will influence their interest to remain using the application. With these, as well as the other variables examined in the

research, the overall result will offer a great assistance in providing insights to online loan e-commerce applications, on what factors they should focus more on improving their UX as it will help to increase user's interest on the E-Commerce loan services.

REFERENCES

- [1] U. Yunus, "A Comparison Peer to Peer Lending Platforms in Singapore and Indonesia," *J. Phys. Conf. Ser.*, vol. 1235, no. 1, 2019, doi: 10.1088/1742-6596/1235/1/012008.
- [2] Y. Maulana, N. Komarudin, W. H. Gunawan, A. A. Yusuf, U. Kuningan, and I. S. Nurjati, "the Influence of Fintech Digital Payment and P2P Lending on Indonesia'S Economic Growth," *Bus. Account. Res. Peer Rev. J.*, vol. 6, no. 3, pp. 1573–1582, 2022, [Online]. Available: <https://jurnal.stie-aas.ac.id/index.php/IJEBAR>.
- [3] OJK, "Financial Technology - P2P Lending," 2023. <https://www.ojk.go.id/id/kanal/iknb/financial-technology/default.aspx> (accessed Jan. 21, 2023).
- [4] D. Pacholczyk, *UI Design From The Experts: Web UI Design Best Practices*. UX Pin, 2016.
- [5] Y. D. Wang and H. H. Emurian, "Trust in E-commerce: Consideration of interface design factors," *J. Electron. Commer. Organ.*, vol. 3, no. 4, pp. 42–60, 2005, doi: 10.4018/jeco.2005100103.
- [6] A. V Thakor, "Fintech and banking: What do we know?," *J. Financ. Intermediation*, vol. 41, p. 100833, 2020, doi: <https://doi.org/10.1016/j.jfi.2019.100833>.
- [7] Z. Siddiqui and C. A. Rivera, "FinTech and FinTech ecosystem: A review of literature," *Risk Gov. Control Financ. Mark. Institutions*, vol. 12, no. 1, pp. 63–73, 2022, doi: 10.22495/rgecv12i1p5.
- [8] S. Lee, "Evaluation of Mobile Application in User's Perspective: Case of P2P Lending Apps in FinTech Industry," *KSII Trans. Internet Inf. Syst.*, vol. 11, pp. 1105–1115, Feb. 2017, doi: 10.3837/tiis.2017.02.027.
- [9] J. Johnson, *Designing with the Mind in Mind, Simple Guide to Understanding User Interface Design Guidelines, 3rd Edition*. 2020.
- [10] B. A. Myers and M. B. Rosson, "Survey on User Interface Programming," in *Proceedings of the SIGCHI Conference on Human Factors*

- in Computing Systems*, 1992, pp. 195–202, doi: 10.1145/142750.142789.
- [11] H. Joo, “A study on understanding of UI and UX, and understanding of design according to user interface change,” *Int. J. Appl. Eng. Res.*, vol. 12, no. 20, pp. 9931–9935, 2017.
- [12] G. Aranyi and P. van Schaik, “Testing a model of user-experience with news websites,” *J. Assoc. Inf. Sci. Technol.*, vol. 67, no. 7, pp. 1555–1575, Jul. 2016, doi: <https://doi.org/10.1002/asi.23462>.
- [13] V. Roto, E. L.-C. Law, A. Vermeeren, and J. Hoonhout, “User Experience White Paper – Bringing clarity to the concept of user experience,” 2011.
- [14] D. Kaplan, “Structural Equation Modeling,” N. J. Smelser and P. B. B. T.-I. E. of the S. & B. S. Baltes, Eds. Oxford: Pergamon, 2001, pp. 15215–15222.
- [15] Y. Yulianto, N. Robihaningrum, and B. D. Elinda, “Management Multivariate Analysis Methods for Variables Measurement in Scientific Papers,” *Aptisi Trans. Manag.*, vol. 3, no. 1, pp. 65–72, 2019, doi: 10.33050/atm.v3i1.826.
- [16] M. Patten, “Planning Questionnaire Research,” *Quest. Res.*, pp. 7–14, 2020, doi: 10.4324/9781315265858-5.
- [17] M. Bordo and A. Levin, “Central bank digital currency and monetary policy,” *J. Econ. Dyn. Control*, vol. 142, no. May, 2017, doi: 10.1016/j.jedc.2021.104150.
- [18] L. N. Zachary, “the Effect of Interest Rates on Demand for Credit By Small Medium Enterprises in Nairobi County a Research Project Submitted in Partial Fulfillment of the Requirements of the Degree of Master of Business Administration in the University of Nairobi,” 2015.
- [19] A. Badruddin, “Conceptualization of the effectiveness of Fintech in financial inclusion,” *Int. J. Enginnering Technol. Sci. Res.*, vol. 4, no. 7, p. pp.959-965, 2017.
- [20] A. Blanco-Oliver and A. Irimia-Diéguez, “Impact of outreach on financial performance of microfinance institutions: a moderated mediation model of productivity, loan portfolio quality, and profit status,” *Rev. Manag. Sci.*, vol. 15, no. 3, pp. 633–668, 2021, doi: 10.1007/s11846-019-00353-4.
- [21] Y. Zhang, H. Li, M. Hai, J. Li, and A. Li, “Determinants of loan funded successful in online P2P Lending,” *Procedia Comput. Sci.*, vol. 122, pp. 896–901, 2017, doi: 10.1016/j.procs.2017.11.452.
- [22] F. Wilson, “Making Loan Decisions in Banks: Straight from the Gut?,” *J. Bus. Ethics*, vol. 137, no. 1, pp. 53–63, 2016, doi: 10.1007/s10551-014-2515-y.
- [23] R. R. Suryono, I. Budi, and B. Purwandari, “Detection of fintech P2P lending issues in Indonesia,” *Heliyon*, vol. 7, no. 4, p. e06782, 2021, doi: 10.1016/j.heliyon.2021.e06782.
- [24] A. L. Kilay, B. H. Simamora, and D. P. Putra, “The Influence of E-Payment and E-Commerce Services on Supply Chain Performance: Implications of Open Innovation and Solutions for the Digitalization of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia,” *J. Open Innov. Technol. Mark. Complex.*, vol. 8, no. 3, 2022, doi: 10.3390/joitmc8030119.
- [25] I. Etikan, “Comparison of Convenience Sampling and Purposive Sampling,” *Am. J. Theor. Appl. Stat.*, vol. 5, no. 1, p. 1, 2016, doi: 10.11648/j.ajtas.20160501.11.
- [26] J. Hair, C. L. Hollingsworth, A. B. Randolph, and A. Y. L. Chong, “An updated and expanded assessment of PLS-SEM in information systems research,” *Ind. Manag. Data Syst.*, vol. 117, no. 3, pp. 442–458, Jan. 2017, doi: 10.1108/IMDS-04-2016-0130.
- [27] K. K.-K. Wong, “Partial Least Squares Structural Equation Modeling (PLS-SEM) Techniques Using SmartPLS,” *Mark. Bull.*, vol. 24, no. 1, pp. 1–32, 2013, [Online]. Available: [http://marketing-bulletin.massey.ac.nz/v24/mb_v24_t1_wong.pdf%5Cnhttp://www.researchgate.net/profile/Ken_Wong10/publication/268449353_Partial_Least_Squares_Structural_Equation_Modeling_\(PLS-SEM\)_Techniques_Using_SmartPLS/links/54773b1b0cf293e2da25e3f3.pdf](http://marketing-bulletin.massey.ac.nz/v24/mb_v24_t1_wong.pdf%5Cnhttp://www.researchgate.net/profile/Ken_Wong10/publication/268449353_Partial_Least_Squares_Structural_Equation_Modeling_(PLS-SEM)_Techniques_Using_SmartPLS/links/54773b1b0cf293e2da25e3f3.pdf).
- [28] J. F. Hair Jr, M. Sarstedt, L. Hopkins, and V. G. Kuppelwieser, “Partial least squares structural equation modeling (PLS-SEM),” *Eur. Bus. Rev.*, vol. 26, no. 2, pp. 106–121, Jan. 2014, doi: 10.1108/EBR-10-2013-0128.
- [29] A. Purwanto and Y. Sudargini, “Partial Least Squares Structural Squation Modeling (PLS-SEM) Analysis for Social and Management Research : A Literature Review,” *J. Ind. Eng. Manag. Res.*, vol. 2, no. 4, pp. 114–123, 2021.
- [30] M. R. Ab Hamid, W. Sami, and M. H. Mohmad Sidek, “Discriminant Validity Assessment: Use of Fornell & Larcker criterion versus HTMT Criterion,” *J. Phys. Conf. Ser.*, vol. 890, no. 1, 2017, doi: 10.1088/1742-6596/890/1/012163.

- [31] L. Lin, Z. Huang, B. Othman, and Y. Luo, "Let's make it better: An updated model interpreting international student satisfaction in China based on PLS-SEM approach," *PLoS One*, vol. 15, no. 7 July, pp. 1–13, 2020, doi: 10.1371/journal.pone.0233546.
- [32] N. Kock, "Hypothesis testing with confidence intervals and P values in PLS-SEM," *Int. J. e-Collaboration*, vol. 12, no. 3, pp. 1–6, 2016, doi: 10.4018/IJeC.2016070101.
- [33] R. S. Hutapea and D. R. Andista, "The Effect of Perceived Ease of Use, Perceived Usefulness, and Risk on User Interest in Using Financial Technology Peer to Peer Lending," *Proc. 2nd Int. Semin. Sci. Appl. Technol. (ISSAT 2021)*, vol. 207, no. Issat, pp. 619–623, 2021, doi: 10.2991/aer.k.211106.096.
- [34] D. J. A. Martin and T. Mauritsius, "The Effect of User Experience on the use of Tokopedia E-Commerce Applications," *Int. J. Emerg. Technol. Adv. Eng.*, vol. 12, no. 3, pp. 99–106, 2022, doi: 10.46338/IJETAE0322_11.
- [35] A. W. Butler, J. Cornaggia, and U. G. Gurun, "Do local capital market conditions affect consumers' borrowing decisions?," *Manage. Sci.*, vol. 63, no. 12, pp. 4175–4187, 2017, doi: 10.1287/mnsc.2016.2560.
- [36] J. S. Suroso and Y. Wahjudi, "Analysis of factors affecting satisfaction and loyalty of digital loan customer at pt bank xyz," *J. Theor. Appl. Inf. Technol.*, vol. 99, no. 11, pp. 2617–2631, 2021.