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Research Article

Factors Affecting User Retention of Mobile Mutual Fund Investment Applications: Evidence from Indonesia

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Mutual fund is one of the most popular investment programs, especially among small investors. Currently, many mobile-based applications are available, facilitating the buying and selling of mutual funds. This number of choices creates competition between application developers, pressuring them to find ways to maintain user loyalty by increasing user retention rates. However, only a few studies have currently discussed user retention in mutual fund investment applications. Furthermore, previous studies never examined the quality factor of the application but instead focused more on other factors outside the application. This study analyzed the factors influencing user retention on mutual fund investment applications in Indonesia from the application's quality and usability aspects. This study was based on the expectation-confirmation model (ECM) as the underlying theory. Data were collected using a survey questionnaire resulting in 414 responses, which were then processed and analyzed using the covariance-based structural equation modeling (CB-SEM) technique. The results of this study indicate that three variables can directly affect user retention in mutual fund investment applications: satisfaction, perceived usefulness, and perceived enjoyment. The satisfaction variable had the most significant influence of these three variables. Several factors influenced satisfaction: perceived usefulness, enjoyment, ease of use, trust, confirmation, prompt response, and security.

1. Introduction

An investment is buying assets whose value is expected to increase over time and provide a return for the buyer. In the financial context, an investment may refer to purchasing securities, real estate, and other valuables whose value can continue to grow so that the buyer will get a profit or capital gains [1]. Currently, there are many investment options available. The mutual fund is one type of investment suitable for beginners or young investors. By investing in mutual funds, investors do not need technical skills to actively manage their assets as the investment manager of each fund conducts it. Mutual fund investments can be made conveniently online on mobile applications that provide features for buying and selling mutual funds. Several mutual fund mobile applications in Indonesia are available in the market, such as Bibit, Bareksa, and Tanamduit. Each of these applications tries to compete by offering unique features in addition to the standard features for buying and selling mutual funds.

For instance, Bibit has a robo advisor feature that can provide recommendations for the type and allocation of mutual funds based on the user's level of risk tolerance. These applications actively compete to gain the market share of an increasing number of new investors, especially during the current COVID-19 pandemic.

Based on data from the Indonesian Central Securities Depository (KSEI), as of the end of 2021, the number of mutual fund investors increased 78.38 percent year-over-year to 3.1 million single investor identification (SID). In addition, the choice of mutual fund investment mobile applications currently available is also increasingly diverse. This increase in the number of investors certainly encourages developers of mutual fund investment applications to continue improving the quality of the services they provide so that users feel comfortable using the applications. Coupled with the increasing number of competitors, it encourages application developers to find ways so that their applications provide more value compared to other similar applications. To win the

competition, mutual fund application developers aim to increase user retention of their applications.

User retention is reflected in continued intention to use a mobile application [2], which contributes to establishing a sustainable relationship between the seller and the buyer [3]. In the context of a mutual fund investment application, the seller here is represented by the application developer and the buyer is the user of the mutual fund investment application. Like other investment instruments, mutual fund investments can have long-term goals. Therefore, user retention is essential so that users who use mutual fund investment applications can continue using the application for an extended period until their financial goals are successfully achieved.

Users have specific considerations in choosing applications for online investment, including mutual fund investment applications. A recent survey reported that 86.6% of Indonesians prefer to invest on applications or platforms that have been registered with The Financial Services Authority (OJK) compared to unregistered ones [4]. Furthermore, respondents cited several qualities when considering an investment platform, including having many convenient features (57.9%), quick processing time (53.1%), having a simple interface (49.8%), and offering many payment options (48.3%). These considerations highlight the importance of internal factors to the mutual fund application, such as application qualities and usability.

Previous research on user retention or continued intention to use has been done on various mobile applications such as messaging applications [5], mobile payment applications [6], mobile learning applications [7], and electronic health applications [8, 9]. However, research on user retention in the context of mutual fund investment applications is scarce. One study related to user retention on mutual fund applications was a study of the famous Chinese mutual fund application Yu'e Bao, conducted by Liu, Zhang, Mao, Xue, and Lin [10]. However, in their study, most of the factors examined were external to the mutual fund application, such as perceived usefulness, habit, and satisfaction.

In the context of Indonesia, we did not find any research that discussed user retention or continued usage intention on mutual fund investment applications. Research on mutual funds in Indonesia discussed other aspects of mutual fund products, such as financial performance [11] and the adoption of online mutual funds application [12]. Considering all these gaps, this study provides a unique perspective by examining factors that influence user retention or continuance intention to use mutual fund applications in Indonesia, both from external and internal elements. Specifically, using the expectation-confirmation model as a theoretical basis, this study examines how internal or application factors such as quality, usability, and external factors such as satisfaction and trust influence users' intention to continue using mutual fund applications.

2. Theoretical Background

This section will discuss the theoretical foundation for this research. The discussion includes several concepts related

to mutual fund application, user retention, the expectation-confirmation model (ECM), and hypothesis development.

2.1. Mutual Fund Investment Application and Continuance Intention to Use. Mutual funds are one of the investment options currently available for investors, especially those who do not have significant capital, time, and ability to calculate the investment risk. This is because when investors invest in mutual funds, the funds invested will be managed by the investment manager. There are four types of mutual fund products to choose from: stocks, money markets, bonds, and mixed funds [13].

One way for investors to invest in mutual fund products is through a mobile application, commonly known as a mutual fund investment application. In general, the mutual fund investment application is a platform with the feature of buying and selling mutual fund products so that users can invest in mutual funds online. Examples of mutual fund investment applications currently available in Indonesia are Ajaib, Bibit, Bareksa, IPOTFUND, BukaReksa, and Tanamduit.

In addition to having the main feature for buying and selling mutual fund products, each mutual fund investment application also has additional features that can make it easier for users to invest. These other features include Bibit's robo-advisor function, IPOTFUND's tools for technical and fundamental analyses, and the news and investor community features offered by Bareksa. These differentiating features are designed to keep users investing through the application.

User retention, which is a concept that can be reflected in continuance intention to use [2], is a core dimension of customer relationship management (CRM) [3]. There is a general assumption that there is a strong relationship between user retention and company profits. The longer the user uses a company's product, the more loyal and valuable the user is [14]. User retention is one of the goals of establishing a marketing relationship. User retention is necessary because it greatly affects the competition and survival of a company.

User retention can be measured through positive word of mouth and repeated usage or purchases [3]. Apart from these two measures, user retention can also be observed based on the condition of the user churn or defection level, namely, users who have left or not reused the company's products [3]. A high level of user retention indicates low user churn in the company and vice versa [15]. Thus, in this study, user retention refers to the level at which users of a mutual fund investment application use the application repeatedly for a long time that can be represented by users' continuance intention to use.

User retention or continuance intention to use has been studied through various theoretical lenses. One theory used to study this phenomenon is the expectation-confirmation model (ECM). ECM is a cognitive model that describes the dynamic cognitive processes that individuals go through when making decisions regarding the sustainability of the use of information technology [16, 17]. ECM is an adaptation of the expectation-confirmation theory (ECT). It posits that the expectations and performance perceived by the

customer will positively impact post-purchase satisfaction and can influence the customer's intention to return and continue using or purchasing [18]. Operationally, continuing intention to use an application or information system is determined by satisfaction and perceived usefulness, while satisfaction is determined by confirmation of initial expectations and perceived usefulness [19].

2.2. An Expectation-Confirmation Model of Continuance Intention to Use.

This study focuses on finding out what factors influence user continuance intention to use mutual fund investment applications in Indonesia. Based on the ECM's concept of continuance intention to use [5, 16], we propose a model of factors influencing the intention to continue using a mutual fund investment application. To better suit the context of the mutual fund investment application, we modified the existing ECM. The following subsections describe each of the constructs that make up the proposed model, as depicted in Figure 1.

2.2.1. Satisfaction.

Satisfaction reflects the cumulative feeling that develops between interactions made by users of an information system [20]. These feelings are reflected in users' positive, indifferent, and negative perceptions of the information systems they use [21]. Dissatisfied users will easily switch to other information systems. Conversely, satisfied users will choose to continue using the information system they are currently using [5].

Several previous studies have shown how satisfaction positively impacts user sustainability in using applications [5, 20]. Research conducted by Gao, Waechter, and Bai [20] shows how satisfaction significantly influences users' sustainability in using mobile purchase services. Meanwhile, Oghuma, Libaque-Saenz, Wong, and Chang [5] research shows that satisfied mobile instant messaging users will continue using the mobile instant messaging service in the future. Based on these considerations, we hypothesize that satisfaction can positively influence continuance intention to use mutual fund investment applications.

H1: Satisfaction has a significant effect on continuance intention to use.

2.2.2. Perceived Usefulness.

Perceived usefulness is the user's view of the benefits obtained from using an information system [5]. Perceived usefulness reflects the extrinsic motivation that underlies the intention to use information systems in the form of user beliefs that technology will improve the performance of a task. This belief can positively impact users' attitudes and intentions towards technology [17].

In previous studies, perceived usefulness has consistently influenced users' intentions to use information systems [5]. Research conducted by Jumaan, Hashim, and Al-Ghazali [17] also shows how perceived usefulness significantly influences user satisfaction and user intentions to continue using the internet on mobile devices. The more benefits the user feels when using an information system or application, the higher the level of satisfaction and the possibility of the user to continue using the information system or application.

H2: Perceived usefulness has a significant effect on satisfaction.

H3: Perceived usefulness has a significant effect on continuance intention to use.

2.2.3. Perceived Enjoyment.

Perceived enjoyment is the feeling of pleasure that users get when using an information system [5]. This feeling can also be in the form of comfortable feeling users feel when using an information system. In the context of mutual fund investment applications, users can feel happy and satisfied if they can achieve their investment goals in a short time. Users can also feel this feeling of pleasure if the applications they use have good performance.

In previous research conducted by Oghuma, Libaque-Saenz, and Chang [5], it was shown that perceived enjoyment has a positive impact on satisfaction and continuance intention. The higher the level of pleasure and comfort felt by users when using an information system, the higher the level of satisfaction and the possibility of users to continue using the information system in the future.

H4: Perceived enjoyment has a significant effect on satisfaction.

H5: Perceived enjoyment has a significant effect on continuance intention to use.

2.2.4. Perceived Ease of Use.

Perceived ease of use is a level where users believe that using certain information systems can reduce the user's efforts in completing a job [22]. Perceived ease of use refers to the extent to which a person believes that using a particular system can free that person from effort [23]. Perceived ease of use is the level of user confidence that using specific information systems can facilitate their work.

Calisir and Calisir [24] conducted a study to determine the relationship between perceived usefulness, perceived ease of use, and interface usability characteristics on end-user satisfaction in enterprise resource planning (ERP) systems. In their study, it was found that perceived ease of use can positively affect satisfaction. The easier an information system or application to use, the higher the satisfaction that users will feel with the information system or application.

H6: Perceived ease of use has a significant effect on satisfaction.

2.2.5. Trust.

Trust represents a person's readiness to be sensitive based on positive expectations of the other party's future actions [20]. In general, trust in technology refers to the willingness to rely on a particular technology in certain situations where negative consequences are likely to occur. Like trust in a person, trust in a specific technology is formed by two different components: trusting intention and trusting beliefs [25].

In research conducted by Gao, Waechter, and Bai [20], trust positively influences the satisfaction level of using mobile purchases. We suggest that this also applies to mutual fund investment applications. The higher the level of user confidence in the application, the higher the level of user satisfaction with the application.

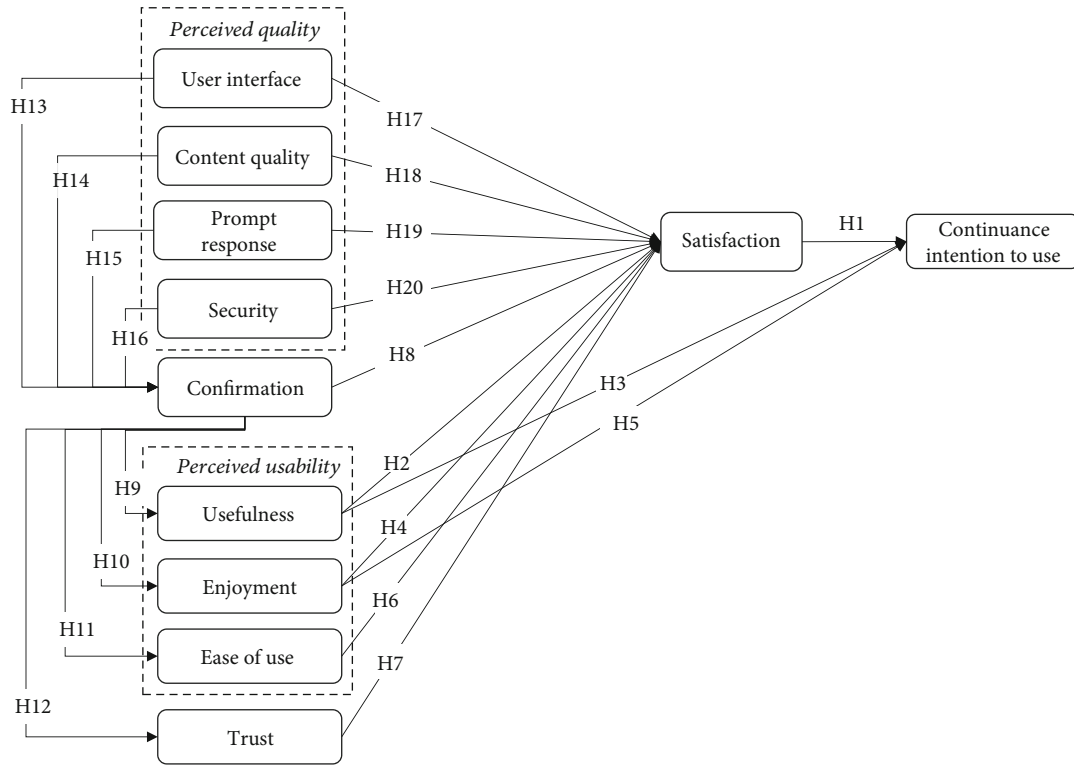H7: Trust has a significant effect on satisfaction.

FIGURE 1: Research model.

2.2.6. Confirmation. Confirmation refers to the extent to which users perceive their initial expectations of the application as confirmed during actual use [18]. In other words, confirmation will measure the level of realization that the application can make against the user's expectations. In addition to confirmation, some previous studies also use the construct of disconfirmation to refer to the same thing. In the context of mutual fund investment applications, user expectations of the applications they use can be confirmed based on user experience and the level of service offered by the application.

Several previous studies have proven that confirmation can positively impact satisfaction, as in previous research conducted by Bölen [26]. When the user experience meets or exceeds the user's initial expectations, confirmation will lead to user satisfaction as the expected benefits of using information systems can be realized [5]. The same can be applied to users of mutual fund investment applications; users will compare their actual experience while using the application with their initial expectations of the application. If their expectations are realized, they will be satisfied with the mutual fund investment application they use, and vice versa.

In addition, meeting the user's initial expectations can also increase the user's perception of the benefits provided by the application, the level of user enjoyment, and the ease of use of the application. This is evidenced in research conducted by Oghuma, Libaque-Saenz, Wong, and Chang [5]. In their study, it was established that confirmation could influence perceived usefulness, perceived enjoyment, and perceived ease of use. In the context of mutual fund invest-

ment applications, user expectations can be confirmed if the application used can provide the usability and benefits expected by the user.

Regarding the relationship between confirmation and trust, in previous research by Talwar, Dhir, Khalil, Mohan, and Islam [27], it was discovered that there was a significant relationship between the confirmation and trust variables. One of the user's considerations in choosing a mutual fund investment application is whether the application has been registered with the relevant supervisory agency, such as the Financial Services Authority (OJK) [4]. Users who choose applications registered with the OJK will expect that the application can be trusted.

H8: Confirmation has a significant effect on satisfaction.

H9: Confirmation has a significant effect on perceived usefulness.

H10: Confirmation has a significant effect on perceived enjoyment.

H11: Confirmation has a significant effect on perceived ease of use.

H12: Confirmation has a significant effect on trust.

2.2.7. User Interface. User interface refers to the ease of user interaction with a user-friendly, pleasant, aesthetic, and easy-to-navigate system [5]. In mutual fund investment applications, the application developer needs to make the application appearance as attractive as possible and easy to navigate. This is because the target of this application itself is people who are still new to investing.

Technology with a good user interface can increase user satisfaction [28]. In addition, we believe that an application

with a good user interface can also meet the user's initial expectations of the application so that user expectations can be confirmed. This has also been proven in previous research by Oghuma, Libaque-Saenz, Wong & Chang [5], which showed a relationship between the user interface and confirmation. Based on this, we hypothesize that the user interface affects confirmation and satisfaction.

H13: User interface has a significant effect on confirmation.

H17: User interface has a significant effect on satisfaction.

2.2.8. Content Quality. Content quality is the quality of the content or information provided by a service [29]. In the context of a mutual fund investment application, the content here can be in the form of statistical data on a mutual fund product or information on current market conditions provided by the application. The quality of this content or information is important because users will use this information for making decisions in buying or selling mutual fund products.

Previous research has shown that content quality can affect the satisfaction of information system users [30]. The better the quality of the content or information the application provides, the higher the level of user satisfaction with the application. Meanwhile, previous research conducted by Park [31] shows a significant relationship between the quality of content or services on smart wearable devices and the extent to which user expectations can be confirmed. Thus, it is hypothesized that:

H14: Content quality has a significant effect on confirmation.

H18: Content quality has a significant effect on satisfaction.

2.2.9. Prompt Response. Prompt response is the user's perception that the information system can quickly respond to user requests [6]. In mutual fund investment applications, the speed of the application in responding to user requests is critical. This is because stock market movements are very volatile, so we need an application that can respond to requests from users as quickly as possible so that users will get the price they want when they buy or sell a mutual fund product. When users can experience using applications that have a fast response, users will be satisfied, and user expectations for application quality can be achieved [6].

H15: Prompt response has a significant effect on confirmation.

H19: Prompt response has a significant effect on satisfaction.

2.2.10. Security. Security describes user expectations for the ability of application providers to protect user information from possible data breaches [5]. Application security is vital in online applications because users are worried that irresponsible parties can gain access and personal information belonging to users. In the context of mutual fund investment applications, application providers must have the adequate technical capacity to guarantee user security when making transactions.

Research conducted by Li, Lu, Hou, Cui, and Darbandi [32] shows that security is an essential factor affecting user satisfaction. Meanwhile, Oghuma, Libaque-Saenz, Wong, and Chang's [5] research shows a significant effect between security and confirmation. Based on this, we suggest that if the application provider can ensure security for its users, the level of user satisfaction will increase, and user expectations can be confirmed.

H16: Security has a significant effect on confirmation.

H20: Security has a significant effect on satisfaction.

3. Methods

This research followed a quantitative approach using a survey questionnaire as a data collection method. The questionnaire consists of four parts. The first part contains validation questions for respondents, while the second part comprises demographic questions from the respondents. The third part contains general questions related to the use of mutual fund investment applications by respondents. Finally, the fourth part includes the measurement items (please see Table 1).

Upon completing the questionnaire, we carried out a readability test involving eight respondents. The readability test was carried out to determine the extent of understanding of the prospective respondents to the questions listed on the research questionnaire so that the prospective respondents could answer the questions smoothly. After going through the readability test, we proceeded with data collection. To collect the date, we used the non-probability convenience sampling technique. The single criterion for respondents in this study was they must be mutual fund investment application users in Indonesia. To maximize reach of potential respondents, data collection was conducted online by distributing the questionnaire through several social media platforms that are popular with retail investors in Indonesia such as Instagram, LINE, and Telegram groups.

Data collection resulted in a total of 714 respondents, with 555 respondents answering all the questions and 159 other respondents not answering the questions in the questionnaire completely. Of the 555 respondents who answered all the questions on the research questionnaire, 41 respondents had never used a mutual fund investment application. Based on this, the number of valid responses amounted to 514 responses.

After the data collection was completed, the data were processed and analyzed using the covariance-based structural equation modeling (CB-SEM). The CB-SEM method was chosen because this study aims to test and confirm existing theories. Data processing tools AMOS 24, SPSS 25, and Microsoft Excel assisted the data analysis process. Following data processing, 100 outlier responses had to be deleted. After deleting the data, the data used and reported at this stage comprise 414 responses. Please see Table 2 for the characteristics of the sample.

Several requirements must be met before estimating the research model. These requirements include sample size,

TABLE 1: Measurement items.

Variable	Code	Indicator	Reference
User interface	IU1	Every feature and function in X app is easy to understand	Oghuma, Libaque-Saenz, Wong, and Chang [5]
	IU2	The content in application X is arranged in such a way that it makes it easier for me to find out which menu I am currently accessing	
	IU3	The amount of information displayed in app X is appropriate	
	IU4	X app has a nice look	
Content quality	CQ1	X app provides reliable information	Kim et al. [30]
	CQ2	X app provides information that serves its purpose well	
	CQ3	X app provides complete and concise information	
	CQ4	X app provides the latest information	
Prompt response	PR1	X app provides reliable information	Shao, Li, Guo, and Zhang [6]
	PR2	Getting information from app X can be done quickly	
	PR3	X app provides fast service to me	
Security	SEC1	X app implements security measures to protect all its users	Oghuma, Libaque-Saenz, Wong, and Chang [5]
	SEC2	X app has the ability to check the user's identity for security purposes	
	SEC3	X application shows great concern for the security of every transaction made by the user	
	SEC4	X application has sufficient technical capabilities to ensure that hackers cannot modify the data I send	
	SEC5	X application has sufficient technical capabilities to ensure that the data I send cannot be modified by hackers	
Perceived usefulness	USE1	I feel app X is useful for the investment I make	Oghuma, Libaque-Saenz, Wong, and Chang [5]
	USE2	X app helps me to transact faster	
	USE3	X app helps me to invest more conveniently	
Perceived enjoyment	ENJ1	I love investing with the X app	Oghuma, Libaque-Saenz, Wong, and Chang [5]
	ENJ2	Investing with the X app brings me a lot of fun	
	ENJ3	I enjoy investing in the X app	
Perceived ease of use	EAS1	Easy for X app to do what I want	Gao, Jiang, and& Tang [22]
	EAS2	X app is easy to use	
	EAS3	My interaction with X app is clear and easy to understand	
	EAS4	It's easy for me to become an expert in investing using X app	
Confirmation	CON1	My experience investing in X app is better than my expectation	Oghuma, Libaque-Saenz, Wong, and Chang [5]
	CON2	The service provided by X app is better than my expectation	
	CON3	Overall, most of my expectations from using the X app have been met	
Satisfaction	SAT1	I am satisfied with the services provided by the X application	Gao, Waechter, and Bai [20]
	SAT2	I feel happy with the services provided by the X app	
	SAT3	My decision to use the X app was a wise decision	
Trust	TRU1	X app can be trusted	Gao, Waechter, and Bai [20]
	TRU2	X app can keep its promise	
	TRU3	X application always pays attention to the interests of users	
Continuance intention to use	INT1	I intend to continue using the X app to invest in the future	Oghuma, Libaque-Saenz, Wong, and Chang [5]
	INT2	I expect to continue using the X app in the future	
	INT3	If I can, I want to continue using the X app	

data normality test, checking outliers, multicollinearity, offending estimate, and common method bias.

For a study using SEM, the minimum sample is suggested to be at least ten times the number of indicators [33]. In this study, there are 38 indicators, so the number of samples required is 380 respondent data. At the data collection stage, the collected data amounted to 514 responses, which exceeded the minimum sample size.

The next step was to check whether all indicators had multicollinearity issues. The correlation value between indicators must be less than 0.9 to meet the requirement for a multicollinearity check [34]. Based on the multicollinearity

TABLE 2: Characteristics of the sample.

Characteristics		Frequency	Percentage (%)
Gender	Male	353	68.7
	Female	161	31.3
Age	<20 years	70	13.6
	20–24 years	358	69.6
	25–29 years	62	12.1
	30–34 years	10	1.9
	35–39 years	8	1.6
	≥40 years	6	1.2
Educational background	SD/SMP/SMA or equivalent	83	16.1
	Diploma I/II	3	0.6
	Diploma III	28	5.4
	Diploma IV/bachelor's degree	386	75.1
	Advanced degree	14	2.7
Occupation	Students	367	71.4
	Teacher/lecturers	4	0.8
	Civil servant	8	1.6
	Private employee	81	15.8
	State-owned enterprise employee	10	1.9
	Entrepreneurs	30	5.8
	Others	14	2.7
Monthly income (including allowance)	<= Rp1.000.000	221	43
	Rp 1.000.001–Rp 5.000.000	209	40.7
	Rp 5.000.001–Rp 10.000.000	71	13.8
	Rp 10.000.001–Rp 15.000.000	7	1.4
	> Rp 15.000.000	6	1.2
Mutual fund application used	Ajaib	99	14.5
	Bareksa	81	11.8
	Bibit	395	57.7
	BukaReksa	23	3.4
	IPOTFUND	35	5.1
	Tanamduit	26	3.8
	Lainnya	26	3.8
Duration of using the mutual fund application	<1 month	72	14
	1–6 months	235	45.7
	7–12 months	111	21.6
	1–2 years	76	14.8
	>2 years	20	3.9
Transaction frequency	Every day	15	2.9
	Once a week	83	16.1
	Once a month	353	68.7
	Once a year	24	4.7
	Others	39	7.6
Last transaction	Today	30	5.8
	Yesterday	38	7.4
	2–7 days ago	156	30.4
	More than a week ago	158	30.7
	More than a month ago	121	23.5
	More than a year ago	11	2.1

TABLE 2: Continued.

Characteristics		Frequency	Percentage (%)
	≤ Rp100.000	122	23.7
Money spent per month using the mutual fund application	Rp100.001–Rp1.000.000	305	59.3
	Rp1.000.001–Rp5.000.000	81	15.8
	Rp5.000.001–Rp10.000.000	6	1.2

test carried out, no relationship or correlation between each indicator has a value of 0.9, indicating that there was no multicollinearity issue.

4. Results

In this section, we evaluate the data analysis results in two segments: measurement model and structural model assessments.

4.1. Measurement Model Assessment. In the measurement model assessment, there are three stages to be carried out: the convergent validity test, the reliability test, and the discriminant validity test [34]. The convergent validity of the variables is assessed through the loading factors, where the value of the loading factors on the latent variables and indicators is expected to have values greater than 0.7 [34]. After inspecting the loading factors, there were still indicators with a loading factor value below 0.7. Hence, it was necessary to modify the research model by removing or changing the error variance of indicators with a loading factor value of less than 0.7.

After the convergent validity test was completed, the reliability test could be carried out. The reliability test was carried out based on three criteria, namely, the Cronbach alpha (CA) value greater than 0.7, the composite reliability (CR) value greater than 0.7, and the average variance extracted (AVE) value greater than 0.5. The results of the reliability test in this study can be seen in Table 3.

In the third stage, the discriminant validity test was conducted. This test can be assessed based on the values of cross-loadings. In cross-loading, each indicator must have a larger loading factor value for the measured variable than the loading factor value for the other variables. The discriminant validity test can also be seen based on the value of the AVE root, where the value of the AVE root must be greater than the correlation coefficient value for each construct or variable [35].

In addition to the square root of the AVE value or the Fornell-Larcker criteria [36], discriminant validity tests can also be carried out using another approach, namely, the heterotrait-monotrait ratio of correlations (HTMT) analysis. If the HTMT value is less than 0.9, then discriminant validity has been established between the two reflective constructs [37]. After calculating the HTMT value, no value exceeds 0.9. The results of the calculation of the HTMT value can be seen in Table 4.

4.2. Structural Model Assessment. At this stage, the goodness of fit (GoF) test was carried out on the structural model. The criteria that we use in this GoF test are CMIN/df, RMSEA, NFI, CFI, GFI, TLI, and RMR. Table 5 shows the results of GoF testing on the structural model.

After passing the GoF, the next step is calculating each endogenous variable's coefficient of determination. The coefficient of determination (R^2) measures the ability of the model to explain the variation of the dependent variable. In general, R^2 has a range of values from 0 to 1. Table 6 shows the results of calculating the R^2 value for each endogenous variable.

Next, hypothesis testing is carried out based on the previously proposed hypothesis. In this study, the hypothesis test refers to the p-value between each variable. The accepted hypothesis that fulfills the requirements is a hypothesis that has a $p-\text{value} < 0.05$ [34]. Table 7 shows the results of hypothesis testing in this study.

Table 7 shows four rejected hypotheses since they had a p-value of more than 0.05. The rejected hypotheses are hypotheses 14, 15, 17, and 18. In addition to the four hypotheses, other hypotheses that have been proposed are accepted. The structural model generated based on the results of hypothesis testing in this study can be seen in Figure 2.

5. Discussion

The results of the study indicate that users of mutual fund investment applications will tend to continue to use the applications for investing if they are satisfied with the application. In addition, the usability aspect of the application is also important. Users will continue to use the application if the application proves to be useful, i.e., can function properly. Another factor affecting user retention is perceived enjoyment, or the feeling of pleasure that users feel when using the application. In the context of mutual fund investment applications, users can feel happy if they can achieve their investment goals in a short time. The user satisfaction can also be felt if their applications have good performance.

Based on the three factors described above, user satisfaction is the factor that has the most significant influence on the retention of users of the mutual fund investment application. This can be a consideration for mutual fund investment application developers to focus on increasing user satisfaction so that user retention rates can also be increased.

These three aforementioned factors (e.g., satisfaction, usefulness, and enjoyment) can explain 68.9% of variance in continuance intention to use. This implies that there are other factors other than those modeled in this study that can potentially affect user's continuance intention to use mutual fund investment applications. Further research may

TABLE 3: Factor loadings, AVE, CR, and CA.

Variable	Indicator	Factor loadings	CA	CR	AVE
User interface (UI)	UI1	0.983			
	UI2	0.985	0.789	0.997	0.99
	UI3	0.983			
Content quality (CQ)	CQ1	0.790			
	CQ2	0.755	0.799	0.897	0.744
	CQ3	0.719			
Prompt response (PR)	PR1	0.764			
	PR2	0.805	0.838	0.909	0.769
	PR3	0.812			
Security (SEC)	SEC1	0.788			
	SEC2	0.769			
	SEC3	0.771	0.864	0.937	0.787
	SEC5	0.798			
Perceived usefulness (USE)	USE1	0.818			
	USE2	0.770	0.842	0.928	0.811
	USE3	0.814			
Perceived enjoyment (ENJ)	ENJ1	0.832			
	ENJ2	0.817	0.868	0.927	0.809
	ENJ3	0.839			
Ease of use (EAS)	EAS1	0.732			
	EAS2	0.757	0.778	0.886	0.722
	EAS4	0.717			
Confirmation (CON)	CON1	0.808			
	CON2	0.779	0.82	0.898	0.746
	CON3	0.751			
Trust (TRU)	TRU1	0.797			
	TRU2	0.733	0.805	0.894	0.737
	TRU3	0.746			
Satisfaction (SAT)	SAT1	0.829			
	SAT2	0.779	0.846	0.921	0.796
	SAT3	0.811			
Continuance intention to use (INT)	INT1	0.912			
	INT2	0.869	0.915	0.954	0.873
	INT3	0.875			

TABLE 4: HTMT results.

	UI	CQ	PR	SEC	USE	ENJ	EAS	CON	TRU	SAT	INT
UI											
CQ	0.803										
PR	0.796	0.776									
SEC	0.805	0.838	0.659								
USE	0.836	0.813	0.735	0.825							
ENJ	0.79	0.795	0.68	0.692	0.837						
EAS	0.897	0.872	0.798	0.811	0.885	0.827					
CON	0.783	0.82	0.729	0.725	0.777	0.766	0.882				
TRU	0.842	0.887	0.753	0.88	0.874	0.819	0.867	0.868			
SAT	0.874	0.869	0.734	0.828	0.856	0.83	0.882	0.845	0.857		
INT	0.73	0.69	0.634	0.714	0.774	0.739	0.793	0.736	0.784	0.825	

TABLE 5: GoF test results.

Indicator	Cut-off value	Results	Status
CMIN/df	<2.0	1.718	*Good fit*
RMSEA	≤0.08	0.042	*Good fit*
NFI	≥0.9	0.927	*Good fit*
CFI	≥0.9	0.968	*Good fit*
GFI	≥0.9	0.9	*Good fit*
TLI	≥0.9	0.961	*Good fit*
RMR	≤0.05	0.014	*Good fit*

TABLE 6: R^2 results.

Variable	R^2	*Effect size*
CON	0.705	*Strong*
TRU	0.537	*Moderate*
EAS	0.544	*Moderate*
ENJ	0.522	*Moderate*
USE	0.553	*Moderate*
SAT	0.847	*Strong*
INT	0.689	*Moderate*

TABLE 7: Hypothesis test results.

Hypothesis	Parameter			Estimates	P-value	Result
1	INT	<—	SAT	0.489	0.011	Accepted
2	SAT	<—	USE	0.649	0.001	Accepted
3	INT	<—	USE	0.227	0.035	Accepted
4	SAT	<—	ENJ	0.493	0.005	Accepted
5	INT	<—	ENJ	0.158	0.047	Accepted
6	SAT	<—	EAS	0.621	0.001	Accepted
7	SAT	<—	TRU	0.467	0.021	Accepted
8	SAT	<—	CON	0.59	0.005	Accepted
9	USE	<—	CON	0.726	0.001	Accepted
10	ENJ	<—	CON	0.65	0.003	Accepted
11	EAS	<—	CON	0.722	0.001	Accepted
12	TRU	<—	CON	0.663	0.002	Accepted
13	CON	<—	UI	0.373	0.02	Accepted
14	CON	<—	CQ	0.019	0.303	Rejected
15	CON	<—	PR	0.039	0.128	Rejected
16	CON	<—	SEC	0.382	0.013	Accepted
17	SAT	<—	UI	0.028	0.249	Rejected
18	SAT	<—	CQ	0.014	0.322	Rejected
19	SAT	<—	PR	0.15	0.048	Accepted
20	SAT	<—	SEC	0.202	0.047	Accepted

consider variables closely related to the user's investment behaviors. For instance, previous studies indicate that past financial return experienced and social pressures may influence investment decision of individual investors [38], which consequently could influence intention to continue using a mutual fund application.

Several factors can affect user satisfaction with mutual fund investment applications. In this study, the factors used can explain user satisfaction strongly by as much as 84.7% of the variance. The variables affecting user satisfaction are perceived usefulness, perceived enjoyment, perceived ease of use, trust, confirmation, prompt response, and security variables.

Based on the research results, this study cannot accept four hypotheses (i.e., hypotheses 14, 15, 17, and 18). This study reveals that content quality does not have a significant effect on confirmation. This implies that in mutual fund investment applications, good quality content or information may not be what users expect when they first use the application. This may be due to the limited contents typically offered by mutual fund investment applications in Indonesia. For instance, regarding the detailed information of the stocks or bonds that make up mutual fund products, investors typically rely on information accessed from other sources outside the application. This could explain why content quality does not have a significant effect on satisfaction either. Based on the two rejected hypotheses, we conclude that content quality does not have a significant impact on increasing user continuance intention to use or retention.

In addition, this study also shows that H15 is not supported as there is no significant effect of the prompt response on confirmation. Based on the results obtained in this study, the application's speed in responding to users is not what users expect when they first use a mutual fund investment application. However, the application's response in providing quick services is found to influence user satisfaction with the application.

Based on the study's results, H17 is also not supported as there is no significant direct relationship between the user interface and satisfaction variables. In the context of the mutual fund investment application, perhaps the user interface design is not an essential factor that can directly affect user satisfaction. It is found the user interface design indirectly affects satisfaction through confirmation of initial expectations in using the application. In addition, the mutual fund investment application is not an application that users will access continuously daily. Users typically only access the application when they want to invest or to check the results of the funds they have invested so that users may not be too disturbed if the application they use has a subpar user interface design.

6. Implications

This study reveals that some of the factors that can affect user continuance intention to use are satisfaction, perceived usefulness, and perceived enjoyment. These results are in line with previous research by Oghuma, Libaque-Saenz, Wong, and Chang [5]. Based on the results of this study, it is also discovered that the trust variable does have a significant influence on user satisfaction, which is in line with an investigation by Gao, Waechter, and Bai [20].

Through this study, we also attempted to expand the scope of using ECM as a model commonly used by previous studies to determine the factors that influence users'
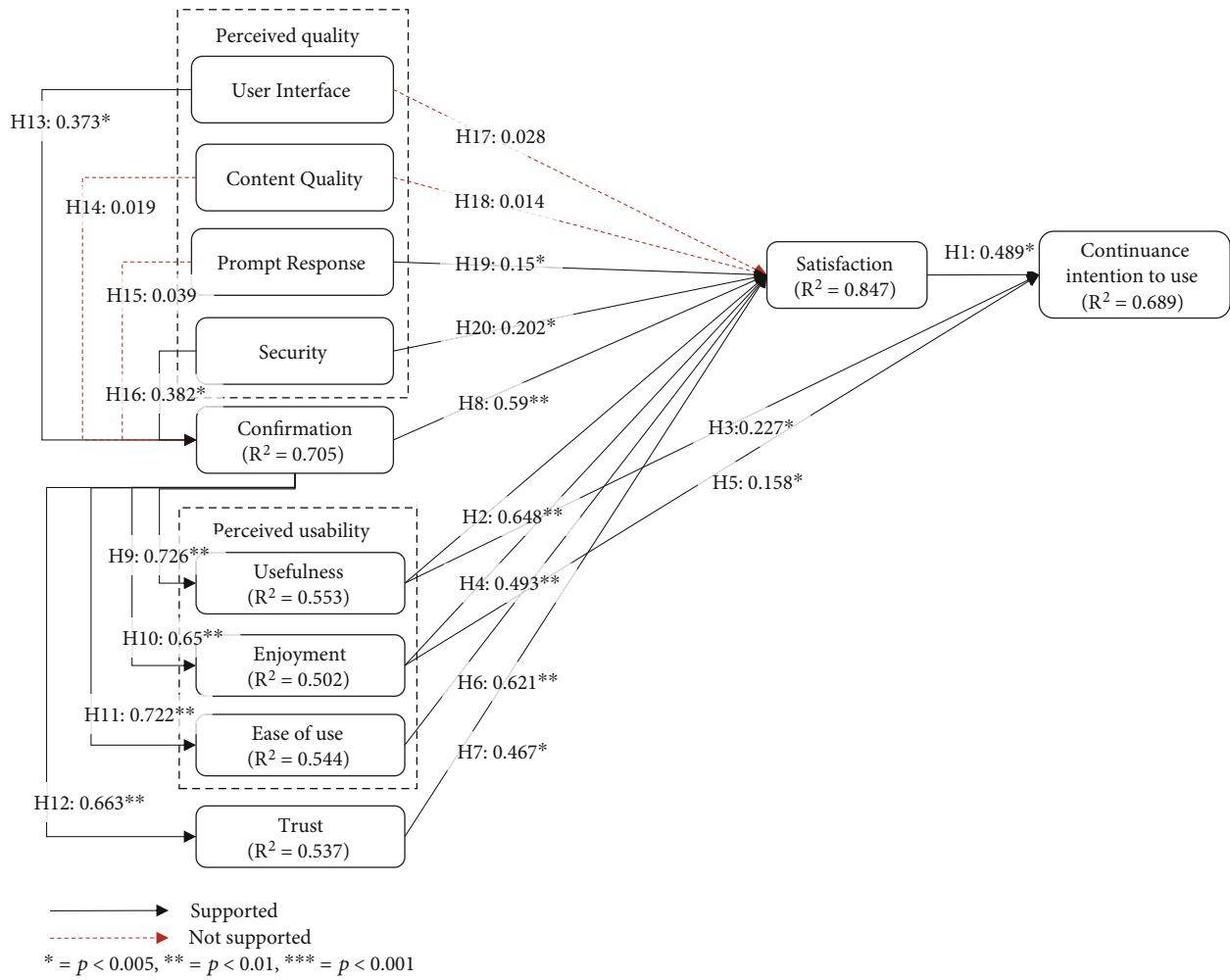
FIGURE 2: Structural model results.

continuance intention to use an information system. When this study was conducted, we could not find any research that applied ECM in mutual fund investment applications. Previous research that used ECM mainly was done on such applications as instant messaging applications [5], mobile payment applications [6], and health applications [9]. The only previous study that we found related to users' continued intentions on mutual fund investment applications was research conducted by Liu, Zhang, Mao, Xue, and Lin [10]. However, their research did not use ECM and did not focus on the quality of mutual fund investment applications, but rather on factors outside the application such as habit, loyalty, capital liquidity, expected earnings, and perceived risk.

The results of this study can be used as guidance for the developers of mutual fund investment applications in Indonesia. Through this study, we hope that the developers of the mutual fund investment application can find out what factors influence the user's intention to continue using the mutual fund investment application. Based on the results of this study, several factors can influence the user's intention to continue using the application, including satisfaction, perceived usefulness, and perceived enjoyment. User satisfaction is the most influential factor affecting the user's

intention to continue using the application. This can be a reference for application developers to prioritize user satisfaction to increase user retention and loyalty. In this study, several factors can affect the level of user satisfaction in mutual funds investment applications including perceived usability factors (i.e. usefulness, enjoyment, ease of use, and trust), confirmation, and the perceived quality factors (i.e. prompt response and security).

Perceived usability relates to how far users feel using a particular application can meet user goals. To achieve this, developers may need to focus on the main purpose of the mutual fund investment application, namely, investment in mutual fund products, so that developers do not need to create various features that are not needed by users. This suggests that the features added to the application are the ones that can support the user's primary purpose for investing, for example, the robo-advisor feature that can help manage the user's risk profile.

Trust relates to how much confidence the user has in an information system while considering the potential negative consequence of using it. Regarding the trust aspect, this implies that the application developer should register the application with the relevant agency or institution that has

the authority to oversee financial service activities. In the context of mutual fund investment applications, the institution with the authority is the Financial Services Authority (OJK). We believe that registering a mutual fund investment application with the OJK will increase user confidence in the application. This is in accordance with a survey conducted by DailySocial [4], which shows that as many as 86.6% of respondents in the survey will choose investment applications that have been registered with OJK.

Confirmation relates to the extent to which the information system or application can meet the user's initial expectations of the application. Based on the results of this study, the user's initial expectations can be confirmed or fulfilled if the application used is of good quality. In this study, at least two factors of application quality can significantly confirm the user's initial expectations of the application. These factors are user interface and security. Based on this, the application developed must have a good appearance and strict security to meet user expectations for the application.

7. Conclusion

The increasing number of choices of available mutual fund investment applications makes application developers compete to offer applications that provide more value to the users compared to other similar applications. However, understanding what makes users continue using the application remains a challenge for mutual fund investment application developers. Built on the ECM as the underlying theory, this study reveals three factors that can directly affect user retention or continuance intention to use in mutual fund investment applications, namely, satisfaction, perceived usefulness, and perceived enjoyment. Out of these three factors, the satisfaction factor has the most significant influence on users' continuance intention to use mutual fund investment applications. The satisfaction factor itself is influenced directly or indirectly by several other factors including application quality (e.g., user interface, prompt response, and security), application usability (e.g., usefulness, enjoyment, and ease of use), confirmation, and trust. All in all, this study emphasized the role of both internal or application factors such quality and usability as well as external factors such satisfaction and trust on influencing mutual fund investment application's user retention as reflected in its continuance intention to use. As this study is regarded as a cross-sectional survey that used a convenience sampling, the generalizability of the findings may be limited. Taking into account this limitation, future research may consider a longitudinal study design with a probability sampling technique.

Data Availability

Data are available on request.

Conflicts of Interest

The authors declare no conflict of interest.

References

[1] E. Napoletano, "What is investing? How can you start investing ? Forbes Advisor," 2020, Retrieved March 25, 2021, from https://www.forbes.com/advisor/investing/what-is-investing/.

[2] M. Albashrawi and L. Motiwalla, "Privacy and personalization in continued usage intention of mobile banking: an integrative perspective," *Information Systems Frontiers*, vol. 21, no. 5, pp. 1031–1043, 2019.

[3] S. Lamrhari, H. El Ghazi, M. Oubrich, and A. El Faker, "A social CRM analytic framework for improving customer retention, acquisition, and conversion," *Technological Forecasting and Social Change*, vol. 174, article 121275, 2022.

[4] M. Nabila, "Survei dailysocial dan Populix: Investasi Reksa Dana Terpopuler di Indonesia. Dailysocial," 2020, Retrieved April 14, 2021, from https://dailysocial.id/post/survei-dailysocial-populix-investasi-reksa-dana-terpopuler-indonesia-2020.

[5] A. P. Oghuma, C. F. Libaque-Saenz, S. F. Wong, and Y. Chang, "An expectation-confirmation model of continuance intention to use mobile instant messaging," *Telematics and Informatics*, vol. 33, no. 1, pp. 34–47, 2016.

[6] Z. Shao, X. Li, Y. Guo, and L. Zhang, "Influence of service quality in sharing economy: understanding customers' continuance intention of bicycle sharing," *Electronic Commerce Research and Applications*, vol. 40, article 100944, 2020.

[7] D. A. Sitar-Tăut, "Mobile learning acceptance in social distancing during the COVID-19 outbreak: the mediation effect of hedonic motivation," *Human Behavior and Emerging Technologies*, vol. 3, no. 3, pp. 366–378, 2021.

[8] Y. C. Lee and L. A. Malcein, "Users' mental models for computer-mediated communication: theorizing emerging technology and behavior in eHealth applications," *Human Behavior and Emerging Technologies*, vol. 2, no. 4, pp. 354–366, 2020.

[9] M. Yan, R. Filieri, E. Raguseo, and M. Gorton, "Mobile apps for healthy living: factors influencing continuance intention for health apps," *Technological Forecasting and Social Change*, vol. 166, article 120644, 2021.

[10] Q. Liu, F. Zhang, M. Mao, B. Xue, and Z. Lin, "An empirical study on factors affecting continuance intention of using YU'E Bao," *Gazette*, vol. 25, no. 5, 2018.

[11] I. R. Pangestuti, S. Wahyudi, and R. Robiyanto, "Performance evaluation of equity mutual funds in Indonesia," *Jurnal Keuangan Dan Perbankan*, vol. 21, no. 4, 2017.

[12] R. A. Rahadi, E. K. Dewi, S. M. Damayanti, K. F. Afgani, I. Murtaqi, and D. Rahmawati, "Adoption analysis of online mutual fund investment platform for millennials in Indonesia," *Review of Integrative Business and Economics Research*, vol. 10, pp. 74–81, 2021.

[13] R. Quiserto, "4 Jenis investasi reksadana, PALING untung sd Paling Aman," 2020, Retrieved April 14, 2021, from https://duwitmu.com/reksadana/4-jenis-investasi-reksadana-untung-sampai-paling-aman/.

[14] X. Fu, X. Chen, Y. Shi, I. Bose, and S. Cai, "User segmentation for retention management in online social games," *Decision Support Systems*, vol. 101, pp. 51–68, 2017.

[15] M. A. Darzi and S. A. Bhat, "Personnel capability and customer satisfaction as predictors of customer retention in the banking sector," *International Journal of Bank Marketing*, vol. 36, no. 4, pp. 663–679, 2018.

[16] A. Bhattacherjee, "Understanding information systems continuance: an expectation-confirmation model," *MIS Quarterly*, vol. 25, no. 3, p. 351, 2001.

[17] I. A. Jumaan, N. H. Hashim, and B. M. Al-Ghazali, "The role of cognitive absorption in predicting mobile internet users' continuance intention: an extension of the expectation-confirmation model," *Technology in Society*, vol. 63, article 101355, 2020.

[18] C. Hsu and J. C. Lin, "What drives purchase intention for paid mobile apps? - An expectation confirmation model with perceived value," *Electronic Commerce Research and Applications*, vol. 14, no. 1, pp. 46–57, 2015.

[19] I.-L. Wu, M.-L. Chiu, and K.-W. Chen, "Defining the determinants of online impulse buying through a shopping process of integrating perceived risk, expectation-confirmation model, and flow theory issues," *International Journal of Information Management*, vol. 52, article 102099, 2020.

[20] L. Gao, K. A. Waechter, and X. Bai, "Understanding consumers' continuance intention towards mobile purchase: a theoretical framework and empirical study - a case of China," *Computers in Human Behavior*, vol. 53, pp. 249–262, 2015.

[21] C.-Y. Li and Y.-H. Fang, "Predicting continuance intention toward mobile branded apps through satisfaction and attachment," *Telematics and Informatics*, vol. 43, article 101248, 2019.

[22] B. W. Gao, J. Jiang, and Y. Tang, "The effect of blended learning platform and engagement on students' satisfaction—— the case from the tourism management teaching," *Journal of Hospitality, Leisure, Sport & Tourism Education*, vol. 27, article 100272, 2020.

[23] Y. J. Joo, K. Y. Lim, and E. K. Kim, "Online university students' satisfaction and persistence: examining perceived level of presence, usefulness and ease of use as predictors in a structural model," *Computers & Education*, vol. 57, no. 2, pp. 1654–1664, 2011.

[24] F. Calisir and F. Calisir, "The relation of interface usability characteristics, perceived usefulness, and perceived ease of use to end-user satisfaction with enterprise resource planning (ERP) systems," *Computers in Human Behavior*, vol. 20, no. 4, pp. 505–515, 2004.

[25] H. McKnight, M. Carter, and P. Clay, "Trust in technology: development of a set of constructs and measures. AIS Electronic Library (AISeL)," 2009, https://aisel.aisnet.org/digit2009/10/.

[26] M. C. Bölen, "Exploring the determinants of users' continuance intention in smartwatches," *Technology in Society*, vol. 60, article 101209, 2020.

[27] S. Talwar, A. Dhir, A. Khalil, G. Mohan, and A. K. M. N. Islam, "Point of adoption and beyond. Initial trust and mobile-payment continuation intention," *Journal of Retailing and Consumer Services*, vol. 55, article 102086, 2020.

[28] S. Liu, H. Liao, and J. A. Pratt, "Impact of media richness and flow on e-learning technology acceptance," *Computers & Education*, vol. 52, no. 3, pp. 599–607, 2009.

[29] S. R. Stoyanov, L. Hides, D. J. Kavanagh, O. Zelenko, D. Tjondronegoro, and M. Mani, "Mobile app rating scale: a new tool for assessing the quality of health Mobile apps," *JMIR mHealth and uHealth*, vol. 3, no. 1, p. e27, 2015.

[30] K. Kim, K. Kim, D. Lee, and M. Kim, "Identification of critical quality dimensions for continuance intention in mhealth services: case study of onecare service," *International Journal of Information Management*, vol. 46, pp. 187–197, 2019.

[31] E. Park, "User acceptance of smart wearable devices: an expectation-confirmation model approach," *Telematics and Informatics*, vol. 47, article 101318, 2020.

[32] F. Li, H. Lu, M. Hou, K. Cui, and M. Darbandi, "Customer satisfaction with bank services: the role of cloud services, security, e-learning and service quality," *Technology in Society*, vol. 64, article 101487, 2021.

[33] R. B. Kline, *Principles and Practice of Structural Equation Modeling*, The Guilford Press, 2016.

[34] J. F. Hair, W. C. Black, B. J. Babin, and R. E. Anderson, *Multivariate data analysis*, Cengage, 2019.

[35] S. Kamthornphiphatthanakul, *9 steps of Best Practice for structural equation modeling analysis (SEM)*, 2017.

[36] C. Fornell and F. L. Bookstein, "Two structural equation models: LISREL and PLS applied to consumer exit-voice theory," *Journal of Marketing Research*, vol. 19, no. 4, pp. 440–452, 1982.

[37] J. Henseler, C. M. Ringle, and M. Sarstedt, "A new criterion for assessing discriminant validity in variance-based structural equation modeling," *Journal of the Academy of Marketing Science*, vol. 43, no. 1, pp. 115–135, 2015.

[38] R. K. Raut, "Past behaviour, financial literacy and investment decision-making process of individual investors," *International Journal of Emerging Markets*, vol. 15, no. 6, pp. 1243–1263, 2020.