Analysis of The Acceptance of Real Estate Online Platforms Among Millennials Using Unified Theory of Acceptance and Use of Technology (UTAUT)

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ABSTRACT

The housing business is a complex industry that involves a gradual process, starting from conceptualizing the area to implementing effective sales strategies. This sector can still be considered conventional, but the advancement of digitalization demands adaptation from property industry players. Real estate online platforms (REOP) have emerged as platforms that bridge the gap for industry players to go digital. Trust serves as the foundation for the intention to initiate change. This research aims to analyze the factors influencing the millennial generation in using REOP. The theoretical framework employed in this study is the Unified Theory of Acceptance and Use of Technology (UTAUT), with variables tested including performance expectancy, effort expectancy, social influence, and facilitation conditions. The results of this research are expected to provide insights into the behavioral intentions of the millennial generation in using REOP. The findings will benefit REOP platforms by informing their managerial decisions to improve services and attract millennial users, who are currently the target market for property purchases.

KEYWORDS: Real Estate Online Platforms (REOP), Unified Theory of Acceptance and Use of Technology (UTAUT), Trust

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1. INTRODUCTION

Housing business is one of the complex businesses. Purchasing a house itself is a multidimensional process due to the involvement of many factors to consider, such as location, structure, and the reputation of the property developer. On the other hand, the increasing population, and the decreasing availability of land for housing have caused property prices to rise and the trend in landed houses to shift towards smaller types to be affordable for the current generation. This is a response to the increasing land prices that are not in line with the purchasing power of the society, especially the millennial generation. However, the millennial generation itself is a potential consumer group and a target market for housing developers. Moreover, According to Dirgantari et al. (2020), internet usage has grown rapidly and is projected to reach 18.9% of the world's population. The high level of internet users has resulted in the growth of online marketplaces or electronic trading systems. Marketplaces are used to enhance traditional market channels by providing web-based storefronts. In this regard, providing comprehensive information is crucial because the quality of online web-based information is still relatively low (Ullah, Sepasgozar, Jamaluddin Thaheem, et al., 2021) Among all of those various marketplaces that emerge in these current years, there are several websites that only focus on selling housing such as Rumah.com, Rumah123, Lamudi, and PinHome. Those websites are known as Real Estate Online Platform or REOP. The main function of (REOP) is to provide a platform that facilitates consumers in finding properties that meet their needs and helps developers, sellers, and agents to market and connect with consumers. In this case, REOPs can be considered as a service that provide to list housing. The Unified Theory of Acceptance and Use of Technology (UTAUT) is a model that analyzes the acceptance of technology. The UTAUT model measures several variables, including performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). These are critical factors in the intention to use a REOP.

On the other hand, the high proportion of millennials in the working age group indicates that millennials have a significant contribution to the housing demand in Indonesia. This is evidence that millennials play an important role in the development and sustainability of the economy in Indonesia. According to (Eka et al., 2020) millennials are consumers who easily obtain information about a product and tend to be more cautious before making a purchase. Therefore, for housing developers, agents, and REOPs who want to target millennials as consumers, they need to better understand the needs of millennials. Developers, agents, and REOPs need to identify the factors that influence millennials' home buying decisions and tailor their REOPs to meet the needs of millennials. This study analyzes which variables in UTAUT have a significant influence on millennials in using Real Estate Online Platforms (REOPs).

2. LITERATURE REVIEW

Real Estate Online Platforms (REOP)

Key players in real estate transactions are divided into developers, end users, and agents or service providers. End users are individuals who use and benefit from real estate services. Based on this, any individual or organization that has a desire to rent or buy real estate or property is considered a user. Some well-known Real Estate Online Platforms (REOPs) in Indonesia include Lamudi, Olx, Pinhome, Rumah123, and many more, which have started providing core information about residential properties, as well as information about the surrounding environment such as distance to the city, schools, places of worship, and markets. Additionally, the provided information includes average property prices, area market accessibility, buy and sale patterns, and travel rates for users (Ullah et al., 2019)

The Home Buying Behavior of Millenials in Indonesia

Millennials are defined in various ways, but most commonly based on birth years. According to (Kurniawan et al., 2020), millennials are defined as a generation born between 1981 and 1999. Based on these definitions, millennials are a population group aged between 24 and 42 years in 2023. According to ('Azzam & Harsono, 2021) millennials are fundamentally associated with certain unique and distinct characteristics compared to other generational groups. Some experts argue that being a millennial is closely related to technology, as millennials are considered the first digital-native generation and have a strong connection with technological advancements even in their personal lives and workplaces (Kim, 2018)). According to (Wijayaningtyas et al., 2019) consumer market analysts estimate that millennials have greater purchasing power compared to previous generations. Through digital technology, millennials are actively using REOPs and online media to interact with their preferred brands. The survey results from developing countries indicate that 83% of millennials would not be interested in using products and services if REOP service providers cannot provide the best experience for them (Wijayaningtyas et al., 2019) According to (Eka et al., 2020), millennials are consumers who easily obtain information about a product and tend to be more cautious before making a purchase.

Unified Theory of Acceptance and Use of Technology (UTAUT) Model

UTAUT is a technology acceptance model that is developed from previous models. The result of this model development is UTAUT, which formulates four core determinants of usage intention. These determinants include performance expectancy, the perceived benefit or usefulness that users obtain from utilizing technology for their daily activities (Patil et al., 2020) effort expectancy, the level of effort associated with using a system or technology by users (Patil et al., 2020) social influence, both direct and indirect influence on users' thoughts, marketing, and actions, which affect behavioral intentions (Singh et al., 2020); facilitating conditions, the assurance of availability of facilities, regulations, and systems for users to use the innovation; and trust, the belief that the counterpart will fulfill

the agreed-upon obligations. Furthermore, UTAUT itself is a model to assess the success of platform adoption in society, organizations, or groups (Venkatesh et al., 2016).

Trust

Trust is a crucial relationship as it enables parties to avoid risks in decision making, especially when it involves significant financial matters like real estate transactions. According to (Patil et al., 2020) trust is the belief that the opposing party will fulfill the agreed upon obligations from the outset.

Structural Equation Model (SEM)

The use of Structural Equation Modeling (SEM) is now widely applied in various disciplines, including organizational management, marketing management, international management, human resource management, management information systems, operations management, education management, management accounting, strategic management, and many more. According to (Hair, Risher, et al., 2019) the PLS-SEM method is used by many researchers because it allows for the estimation of complex models with multiple constructs, indicator variables, and structural paths without imposing distribution assumptions on the data. PLS-SEM is a predictive- causal approach to SEM that emphasizes prediction in estimating statistical models, with its structure designed to provide causal explanations. According to (Hair, Sarstedt, et al., 2019), this technique overcomes the apparent dichotomy between explanation, as commonly emphasized in academic research, and prediction, which forms the basis for developing managerial implications. In this study, confirmatory factor analysis (CFA) is used, where all variables can be directly measured (observable), while in SEM, variables cannot be directly measured (unobservable). Unobservable variables are measured by several indicator variables forming the variable.

3. METHODS

Quantitative method is defined as a traditional, positivist, scientific, or scientific discovery method (Ahyar & Juliana Sukmana, 2020), where through the research findings, the researcher can develop a basic idea into something much bigger and novel. The research process begins with identifying the problem and background, conducting a literature review, determining the research model and hypotheses, and defining the research variables and indicators. Data is collected through questionnaires and then analyzed using SmartPLS. Furthermore, the design for this quantitative research is preordained and conclusive with a quantitative descriptive approach. The results of this study can provide new insights into the acceptance of technology in Real Estate Online Platforms (REOP). The endogenous latent variables in this study are behavioral intention and use behavior, while the exogenous latent variables include performance expectancy, effort expectancy, social influence, facilitating condition, and trust. Moreover, the study tests six hypotheses, which are as follows: h1: Trust (TR) has a significant positive effect on behavioral intention (BI); h2: Performance expectancy (PE) has a significant positive effect on behavioral intention (BI); h3: Effort expectancy (EE) has a significant positive

effect on behavioral intention (BI); h4: Social influence (SI) has a significant positive effect on behavioral intention (BI); h5: Behavioral intention (BI) has a significant positive effect on use behavior (UB); h6: Facilitating condition (FC) has a significant positive effect on use behavior (UB). The population in this research is millennial users of REOP, and the sample taken in this research is millennials who use REOP as a platform to search for houses. In this study, the researcher used the Likert scale to measure the respondent's behavior that is measured from 1 to 5 (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree). The data survey was created using Google Form and spread it online through the social media. Subsequently, the data will be processed using SmartPLS3 which is divided into two stages: First Order Construct and Structural Equation Modeling.
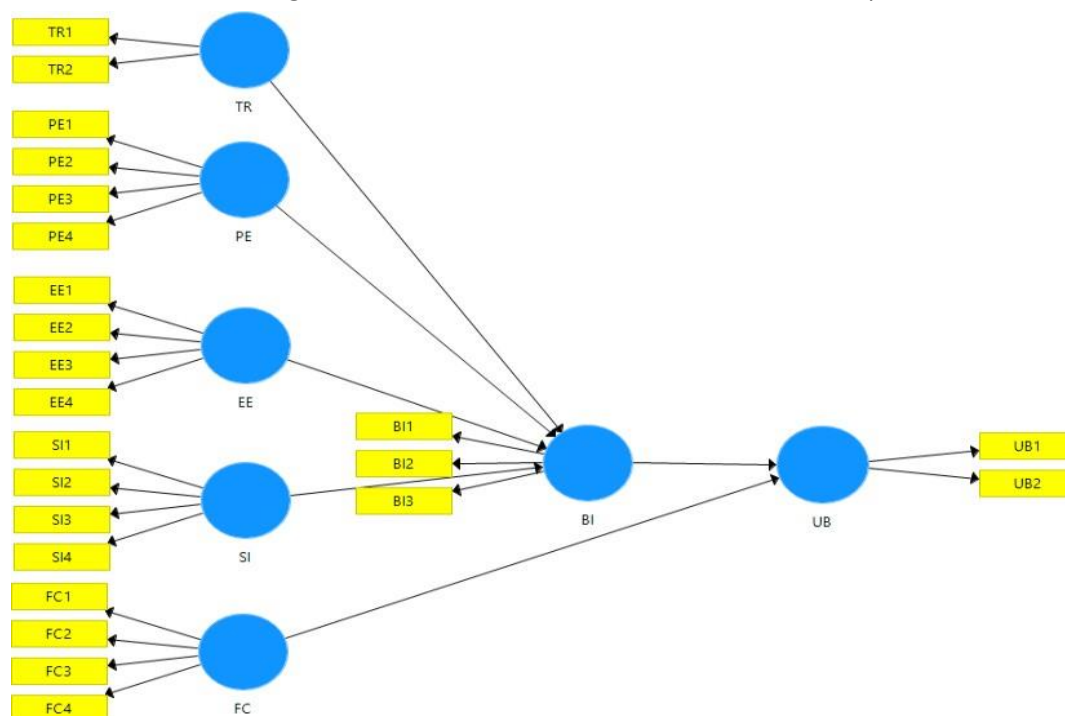

FIGURE 1. Research model

4. RESULTS

Data Collection

In this study, the data was obtained through a questionnaire created using Google Forms and then disseminated through social media. In the questionnaire, the researcher obtained a total of 71 respondents, with 65% (46 respondents) being female and 35% (25 respondents) being male. Furthermore, from the distributed survey, it was found that 51% of respondents (36 respondents) were aged 27-30 years, 28% of respondents (20 respondents) were aged 31-34 years, 17% of respondents (12 respondents) were aged 39-42 years, and 4% of respondents (3 respondents) were aged 39-42 years. The researcher also surveyed the respondents' occupation background and found that 80% of respondents (57 respondents) worked as private employees, 13% of respondents (9 respondents) worked as entrepreneurs, and 7% of respondents (5 respondents) worked as state- owned enterprise employees. The survey was also dominated by respondents

from Surabaya, with a total of 69% of respondents (49 respondents), and 31% of respondents (22 respondents) were from the city of Malang.

Partial Least Squares Structural Equation Model (PLS-SEM) Test

In the outer model measurement, each latent variable is connected to its respective indicator variables. In this study, Effort Expectancy, Facilitating Condition, Performance Expectancy, and Social Influence have four indicators each, while Trust and Use Behavior have two indicators each, and Behavioral Intention has three indicators. These indicators are reflective indicators as they reflect or manifest the underlying constructs. On the other hand, in the specification of the inner model, the researcher connects the exogenous latent variables (independent) to the endogenous latent variables (dependent). The exogenous latent variables in this study are Effort Expectancy, Facilitating Condition, Performance Expectancy, Social Influence, and Trust. The endogenous latent variables in this study are Behavioral Intention and Use Behavior. However, in the case of the Behavioral Intention variable, it plays a dual role as both a dependent and independent variable.

Outer and Inner Model Evaluation

Outer model evaluation is conducted using PLSAlgorithm to determine the outer loadings. The outer loadings are used to measure the relationships between indicators and their latent variables. Based on the results of the PLSAlgorithm, it is found that each variable has values greater than 0.7 in the testing of Indicator reliability, internal consistency reliability, Cronbach's Alpha, and Composite Reliability. From these results, it can be concluded that the indicators used are good and reflect the constructs in this study.

TABLE 1. Validity evaluation outer model

Variable	Loading factor	Variable	Loading factor	Variable	Loading factor
PE1	0.963	SI1	0.950	TR1	0.965
PE2	0.956	SI2	0.881	TR2	0.966
PE3	0.958	SI3	0.969	BI1	0.954
PE4	0.961	SI4	0.847	BI2	0.964
EE1	0.907	FC1	0.923	BI3	0.950
EE2	0.939	FC2	0.939	UB1	0.973
EE3	0.916	FC3	0.970	UB2	0.970
EE4	0.912	FC4	0.905		

After obtaining the indicator values, the researcher performs a test of convergent validity, and through this testing, it is found that all variables in the outer model have AVE values greater than 0.5. Based on the above description, the outer model in this study shows good results and can proceed to evaluate the inner model.

Analysis of The Acceptance

TABLE 2. Validity and reliability test

Variable	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Effort expectancy (EE)	0.938	0.956	0.843
Facilitating Condition (FC)	0.952	0.965	0.874
Performance expectancy (PE)	0.971	0.979	0.921
Social Influence (SI)	0.933	0.952	0.833
Trust (TR)	0.926	0.965	0.931
Behavioral Intention (BI)	0.953	0.970	0.914
Use Behavior (UB)	0.941	0.971	0.944

In analyzing the inner model, the researcher used SmartPLS software to measure the relationships between independent and dependent variables. The inner model evaluation in this study includes R2 testing to assess the goodness of fit of the model, f-square (f2) testing to examine the effects between constructs, Q2 testing, and path coefficients. The initial evaluation in the inner model is the R2 test to assess the goodness of fit of the research model. The statistical testing results show that the R2 value for the Behavioral Intention variable is 0.960, indicating a strong moderate relationship, while the R2 value for the Use Behavior variable is 0.846, indicating a strong relationship. From the R-square values, it can be concluded that the Effort Expectancy, Facilitating Condition, Performance Expectancy, Social Influence, and Trust variables moderately explain 96% of the variance in the Behavioral Intention variable. Additionally, these variables strongly account for 84.6% of the variance in the Use Behavior variable.

TABLE 3. Adjusted R^2

Variable	R Square
Behavioral Intention (BI)	0.960
Use Behavior (UB)	0.846

Next, the f^2 test is conducted to assess the magnitude of the influence between dependent and independent variables. A higher f^2 value indicates a stronger effect of the independent variableon the dependent variable. The results of the testing reveal that the Effort Expectancy and Social Influence variables have a moderate effect on the Behavioral Intention variable. The Performance Expectancy and Trust variables have a small effect on the Behavioral Intention variable. The Behavioral Intention variable has a moderate effect on the Use Behavior variable, while the Facilitating Condition variable has a small effect on the Use Behavior variable.

TABLE 4. Goodness of fit (f^2)

Hypothesis	f-Square	Note
Behavioral Intention -> Use Behavior	0.256	Medium
Effort expectancy -> Behavioral Intention	0.286	Medium
Facilitating Condition -> Use Behavior	0.035	Small
Performance expectancy -> Behavioral Intention	0.021	Small
Social Influence -> Behavioral Intention	0.217	Medium

Trust -> Behavioral Intention	0.113	Small

Furthermore, the Q^2 test is performed to determine the relative influence of the inner modelon the observed measurement of endogenous variables. The Q^2 test shows that the research model has a strong predictive relevance in predicting the Behavioral Intention and Use Behavior variables.In the final step of the inner model test, the path coefficients are examined to determine the relationships between variables. Through this testing, it is found that the Effort Expectancy, SocialInfluence, and Trust variables have a positive relationship with the Behavioral Intention variable, while the Performance Expectancy variable has a negative relationship with the Behavioral Intention variable. The Behavioral Intention variable and the Facilitating Condition variable have apositive relationship with the Use Behavior variable.

TABLE 5. Predictive relevance (Q^2)

Variable	Q^2
Behavioral Intention (BI)	0.790
Use Behavior (UB)	0.764

Hypothesis Testing

After establishing that both the inner and outer models are good, hypothesis testing can be conducted. In hypothesis testing, the t-statistic and p-value of each variable relationship areexamined. Based on the hypothesis testing with a significance level of 5% (0.05), it is found that the Effort Expectancy and Social Influence variables have a significant influence on the BehavioralIntention variable. The Trust and Performance Expectancy variables do not have a significant influence on the Behavioral Intention variable. The Behavioral Intention variable has a significant effect on the Use Behavior variable, while the Facilitating Condition variable does not have a significant effect on Use Behavior.

TABLE 6. Research hypothesis test

Hypothesis	Hypothesis	T Statistics	P Values
H1	*Trust -> Behavioral Intention*	1.524	0.128
H2	Performance expectancy -> Behavioral Intention	0.676	0.499
H3	Effort expectancy -> Behavioral Intention	3.566	0.000
H4	Social Influence -> Behavioral Intention	2.243	0.025
H5	Behavioral Intention -> Use Behavior	2.897	0.004
H6	Facilitating Condition -> Use Behavior	1.033	0.302

SEM-PLS Analysis Results

Finally, the results of the SEM-PLS testing for the six hypotheses are presented based on which variables have a significant influence. Based on the conducted tests, it is found that several variables have a significant influence on Behavioral Intention and Use Behavior. Two independent variables, Effort Expectancy and Social Influence, have a significant influence on the Behavioral Intention variable, as evidenced by their p-values

of 0.000 and 0.025, respectively. In this case, theEffort Expectancy variable has the highest level of significance among the others. Furthermore, it is revealed through the research that the Effort Expectancy variable has a positive and significant relationship with Behavioral Intention. In the moderation effects testing, it is also found that the Effort Expectancy variable has significant results regarding the gender moderation variable, while it does not show any moderation effects with other moderation variables. Based on the survey conducted, the majority of respondents agreed or strongly agreed that REOP is an easily understandable platform that assists in property search. On the other hand, for the Social Influencevariable, it is found that it has a positive and significant relationship with Behavioral Intention.

5. CONCLUSIONS

The researchers used a questionnaire as a research instrument to collect data from 71 millennial respondents who use real estate online platforms (REOP). The validity and reliability testing of the data using SmartPLS showed that the data used are valid and reliable, with Cronbach's alpha and composite reliability values above 0.7. The outer model evaluation results showed that the loading factors of each indicator are above 0.7, indicating a good research model. The evaluation of the inner model, measured through the R-square (R2) values, is 0.96. This means that 96% of the variance in the endogenous variables can be explained by the exogenous variables. The inner model testing with cross-validated redundancy Q2 also showed a high value of 0.79 or 79%. Hypothesis testing using the SEM-PLS analysis model indicated that out of the five exogenous variables, two variables, namely effort expectancy and social influence, significantly influence the acceptance of REOP. Based on the factors that have a significant positive influence on REOP acceptance, it can be concluded that higher expectations of ease of use for REOP among millennials will increase their behavioral intention to use REOP. The same applies to the social influence, where a higher social influence to use REOP will increase millennials' behavioral intention to use REOP. The variables trust, performance expectancy, and facilitating condition showed non-significant results, indicating that trust, perceived usefulness, and facilitating conditions do not have a significant positive influence on REOP acceptance.

Based on these findings, it can be concluded that REOP providers should pay more attention to the ease of use of their products. One way to address this issue is by integrating the e-commerce application with other applications, such as social media platforms. Social media platforms are commonly used, especially by millennials, and integrating REOP with one of these platforms can encourage users to easily access the properties they are searching for. Other user-friendly features can also have an impact on behavioral intention. Additionally, evaluating the user interface is important, as a user-friendly interface will enable users to interact more effectively with the REOP platform. In addition to Behavioral Intention, social influence is also a significant variable influencing Behavioral Intention. In this regard, through REOP marketing strategies, providers should consider factors related to social opinions and preferences. One approach to address this

is by utilizing Key Opinion Leaders (KOLs) or Social Media Influencers to introduce the REOP platform to new users. This can be done through various forms of collaboration that appear organic, such as video content, ad lib, testimonials, or recommendations. Through KOLs, who often have many followers, messages or advertisements can reach a wider audience more easily. Another approach is to collaborate with property developers. In this case, a banner statement can be displayed indicating that the units or properties can be accessed through the REOP platform.

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