Reinvestigating millennial shopping behavior on the sharing economy platform: The moderating role of COVID-19 awareness level

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Abstract	Drawing from the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), this study aims to develop a predictive model concerning the shopping behaviour of millennials within the realm of the sharing economy (SE) mobile application. To accommodate prior research findings while providing novelty, this study integrates hedonic enjoyment and price-saving orientation as predictive factors, alongside the level of COVID-19 awareness as a moderating variable. An online survey was administered, and primary data was collected by distributing an electronic questionnaire link randomly via email and social media platforms. Employing a sampling judgement technique, 260 millennials in Indonesia who utilize the SE (Gojek) mobile app were identified as participants. Results from the PLS-SEM analysis reveal that performance expectancy, effort expectancy, social influence, price-saving orientation, and habits exert a favorable and significant impact on behavioral intentions. Furthermore, habits and behavioral intentions were found to significantly influence the actual usage of the SE app among millennials. Conversely, hedonic enjoyment demonstrated no significant influence on behavioral intentions. Moreover, the moderating role of COVID-19 awareness was observed to both enhance and diminish direct relationships. The implications, both theoretical and practical, along with recommendations for future research, are deliberated upon.
Keywords	UTAUT2, hedonic enjoyment, price-saving orientation, level of COVID-19 awareness, sharing economy app, PLS-SEM

INTRODUCTION

Entering the endemic period, the global economic disruption left by COVID-19 has begun to show the direction of changes in consumer behavior that are increasingly digital, making the trend of the sharing economy (SE) business increasingly unstoppable (Mondal & Samaddar, 2022). The term "SE" is defined as a business model in which a person can feel the benefits of a good or service without having to buy or own the item (Barnes & Mattsson, 2016). Leveraging the app, the platform trades access to exchanges based on the principle of "sharing" and rests on the idea that it is often better to share than to own, to the extent that it allows individuals and groups to make money from underutilized resources (Chen & Salmanian, 2017). A 2019 PWC survey predicts the promising potential of the sharing economy, with 72 percent of 1,000 consumers

indicating a shift towards a future sharing economy. Many sectors have benefited from the emergence of application-based sharing economies and technology innovations, such as the main ones in tourism and hospitality industry, culinary, banking, delivery services, and others (Barnes & Mattsson, 2016). Leveraging the app, the platform trades access to exchanges based on the principle of "sharing" and rests on the idea that it is often better to share than to own, to the extent that it allows individuals and groups to make money from underutilized resources (Mondal & Samaddar, 2022).

The current study utilized the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) as a basis to predict the adoption of mobile application technology within the sharing economy context. This theory is utilized owing to its capacity to make timely predictions, its broad range of motivational factors, and its

significant potential for cross-comparison and applicability to various user groups in the dynamic technological environment (Taneja & Bharti, 2022; V. Venkatesh et al., 2016).

Several previous studies have applied and tested this model extensively, with a wide array of modification, to analyze consumer spending behavior in various applications such as m-commerce (Chopdar *et al.*, 2018), tourism (Escobar-Rodríguez & Carvajal-Trujillo, 2014), information and communication technology (Chen & Salmanian, 2017), mobile health (Kim & Lee, 2022), and others. However, there are still doubts over the capability of the UTAUT2 framework to predict the technology acceptance in the context of the sharing economy and in developing countries such as Indonesia, which has one of the highest smartphone users in the world and provides a platform for the sharing economy to achieve its growth goals. Moreover, as we enter the post-COVID-19 period, an interesting question arises to be studied, namely the extent of the relevance between awareness about COVID-19 and user acceptance in the context of the sharing economy in Indonesia. Thus, empirical gaps were identified and the original UTAUT2 model was extended to provide the novelty of the study.This is also in line with the suggestion of UTAUT2 previous research, stated that adding external variables or mediation-moderation analysis are potential to improve the predictive ability of this model (Escobar-Rodríguez & Carvajal-Trujillo, 2014; Morosan & DeFranco, 2016; Viswanath Venkatesh et al., 2003a).

The UTAUT2 model developed was then tested to fill empirical gaps in the context of sharing economy application users in Indonesia. Therefore, the purpose of the study is (1) to investigate the influence of the original constructs of UTAUT2 (performance expectancy, effort expectancy, social influences, and habits) on behavioral intentions and the actual use of the mobile sharing economy application; (2) to develop an expanded UTAUT model by adding two modification constructs (predictors), namely hedonic enjoyment (Suh & Cheung, 2017), and price-saving orientation (Escobar-Rodríguez & Carvajal-Trujillo, 2014); and (3) to test the role of moderation, namely the level of awareness of COVID-19, which is also an extension of UTAUT2 moderation (Saefi et al., 2020).

The results are expected to bring significant implications in terms of SE acceptance behavior in the post-COVID-19 period. This study also provide understanding of millenial purchasing behavior via SE mobile apps which can provide significant implications for the e-commerce service industry.

THEORETICAL REVIEW AND HYPOTHESES DEVELOPMENT

The useful adoption of any information technology (IT) or information system (SI) highly relies on the user's acceptance (Davis, 1989). In recent decades in the domains of psychology, SI, and sociology, many theoretical models have been developed to predict and explain the user's acceptance of technology (Pavlou, 2003; Venkatesh *et al.*, 2003b).

Venkatesh et al. (2003a) proposed a unified model called the Theory of Acceptance and Use of Integrated Technologies (UTAUT). In the development, Venkatesh *et al.* (2012) then added a new construct and labeled it UTAUT2, which consists of eight constructs, namely performance expectancy, effort expectancy, social influences, hedonistic motivations, price value, conditions, habit, behavioral intention, and usage. Applied research regarding the UTAUT model has been carried out extensively, and due to its ability to integrate different TAM, the UTAUT model has contributed greatly to the exploration of the acceptance and use of technology (Venkatesh *et al.*, 2003a).

The original variables of UTAUT2 examined in the current work are performance expectancy, effort expectancy, social influence, and habit. On the other hand, two variables were modified for the extesion of the model, namely hedonic enjoyment and price-saving orientation. Empirical testing was carried out to determine the influence of six exogenous variables on behavioral intentions and the actual use of SE applications. In addition, the role of moderation in the level of COVID-19 is also being investigated to answer the knowledge gap. Figure 1 shows the framework of the research concept, which is based on what was elaborated above.

Performance expectancy and behavioral intention to use sharing economy app

Performance expectancy is defined as "the degree to which an individual believes that using the system will help him to achieve gains in job performance" (V. Venkatesh et al., 2012). Performance expectations are also assessed as key in this research model and are connoted under different names: the perception of usefulness in TAM and extrinsic motivation in the motivational model (Davis, 1989; Viswanath Venkatesh et al., 2003b). In the context of the sharing economy (SE), the study defines
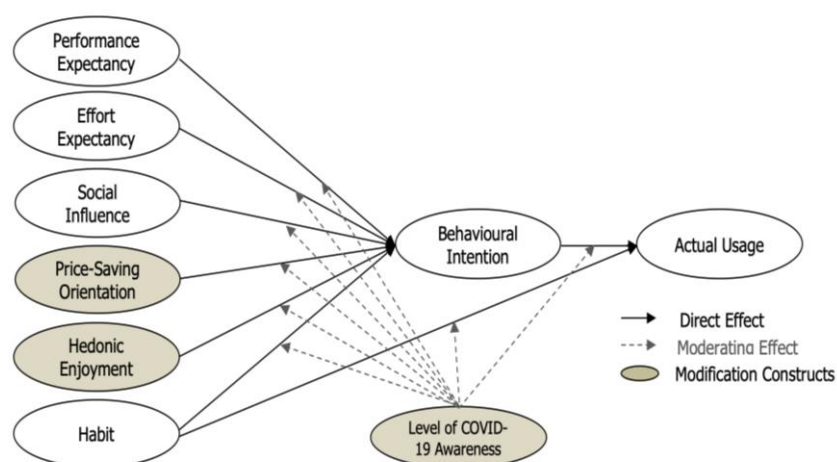
Figure 1.
Conceptual framework model

performance expectations as the degree to which users believe that using SE applications will increase their day-to-day productivity. Several previous studies in various object backgrounds have reported that performance expectations are one of the most decisive constructs in predicting the behavioral intentions of mobile app users (Hew et al., 2015; Palau-Saumell et al., 2019; V. Venkatesh et al., 2016). In line with the above findings, the performance expectations of an app during the COVID-19 period have been confirmed to help people meet their daily information needs in various forms, for example, the contact-tracing application Morchana in Thailand (Yuduang et al., 2022), and health (e-fitness) in South Korea (B. Kim & Lee, 2022). Nonetheless, the study of Chan, et al. (2021) in Malaysia did not find any significant influence from the two relationships above. Therefore, in response to the contradiction of the above findings, it is interesting to further test whether the performance of the application in the context of SE provides new knowledge in the post-COVID-19 period. Therefore, it can be assumed that:

H1: There is a positive relationship between performance expectancy and behavioral intention to use sharing economy app

Effort expectancy and behavioral intention to use sharing economy app

Effort expectancy is defined as "the degree of ease associated with the use of the system" (V. Venkatesh et al., 2012). It has been proven as

a pivotal determinant in predicting user behavior intentions in various mobile applications based on sharing economy or collaborative consumption, such as tourism in India (Airbnb) (Tamilmani et al., 2022), mobile payment in Indonesia (Ashoer et al., 2022), and a app-based online flight ticket booking in Spain (Escobar-Rodríguez & Carvajal-Trujillo, 2014). In the time of COVID-19, the various conveniences provided by the app features have helped the community when social distancing is implemented (Li & Fang, 2022; Vinerean et al., 2022). In other words, it can be estimated that the higher the level of expectation effort, the higher the user's intention to use the SE application in the endemic period. Based on the above argumentation, the hypotheses proposed:

H2: There is a positive relationship between effort expectancy and behavioral intention to use sharing economy app

Social influence and behavioral intention to use sharing economy app

Social influence is defined as "the degree to which an individual perceives that an important group of groups (such as family, friends, co-workers) believes that he or she should use the new system" (V. Venkatesh et al., 2012). As an extrinsic motivator in the technology acceptance model (in this case UTAUT) (Lee, Lee, & Hwang, 2015), many substantial impacts of social influence in uploading individual behavioral intentions to shop or transact directly through various mobile apps services have

been widely recognized, such as (Chopdar et al., 2018), *mobile banking* (Muñoz-Leiva et al., 2017), and even *mobile e-health* (Lee & Cho, 2017). Comments or judgments of valuable people to adopt a food delivery service-based sharing economy application in the time of COVID-19 are confirmed to generate high acceptance in the eyes of users (Poon & Tung, 2022; Troise et al., 2020). Thus, it can be assumed that users of SE applications are able to refer the opinions of others as a reference on using SE applications in the future. Therefore, it is hypothesized that:

> *H3: There is a positive relationship between social influence and behavioral intentions to use sharing economy app.*

Price-saving orientation and behavioral intention to use sharing economy app

In UTAUT2, Venkatesh et al. (2012) define price values as "the cognitive trade-off of the consumer between the perceived benefits of the application and the monetary cost of using it". In their assumptions, Venkatesh et al. (2012) impose monetary costs on the use of technology as long as those costs provide some benefit or economic value to its users. However, in the context of SE, this construct may not apply as users can download the app directly through their smartphones without spending a penny – although the value of the price offered is not yet certain. On the other hand, previous studies have proven that the aspect of "price savings" in the purchase of websites or mobile apps allows their users to get cheaper or affordable prices (Jensen, 2012). The effectiveness of discounts is also supported by evidence from a study that states discounts will add to the perceived value of the offer of a product because it shows that the price is an even better offer (Yeo et al., 2017). For example, users are able to do food price comparisons directly through the application, coupled with offers of discounted shipping costs or others (Chopdar et al., 2022). Given the importance of the perception of price savings orientation within the framework of UTAUT2 (Escobar-Rodríguez & Carvajal-Trujillo, 2014; Palau-Saumell et al., 2019), it is interesting to test how it affects customer behavioral intentions in using SE applications in endemic times. Thus, the hypothesis is stated as follow:

> *H4: There is a positive relationship between the price-saving orientation and the behavioral intention to use sharing economy app.*

Hedonic enjoyment and behavioral intention to use sharing economy app

Hedonic enjoyment is simply defined as "pleasure or pleasure gained from the use of technology" (V. Venkatesh et al., 2012), and is often considered a development of the term "pleasure" in TAM (V. Venkatesh, 2000). Previous research has found that perceived enjoyment (in the UTAUT2 model) has a substantial positive and effect on user behavioral intentions for mobile internet adoption (V. Venkatesh et al., 2016), mobile banking, commerce, or payment (Hew et al., 2015; B. Kim & Lee, 2022; Slade et al., 2015) and sharing economy (Chen & Salmanian, 2017; Tamilmani et al., 2022). Considering that hedonists and pleasures are intrinsic motivations that complement each other and could be integrated within the framework of technological acceptance, we modify and add hedonic pleasure (hedonic enjoyment) variables – which have theoretically been conceptualized in the context of psychology by (Waterman, 1993) and (no one) information systems by (Suh & Cheung, 2017). Based on the above explanation, it is clear that the relationship between hedonic enjoyment and the intention to use SE applications still leaves room for further empirical proof in the context of expanding the theory of UTAUT2. Thus, the hypothesis raised is:

> *H5: There is a positive relationship between hedonic enjoyment and behavioral intention to use sharing economy app.*

Habit and behavioral intention to use sharing economy app

The next predictor has just been added to UTAUT2, namely "consumer habits", which has received quite a lot of positive confirmation in research related to the acceptance of information systems (IS) (S. S. Kim & Malhotra, 2005; V. Venkatesh et al., 2012; Yin & Zhu, 2014). In the broad context of technology use, habit is defined as "the degree to which people tend to perform behaviors (using SI) automatically due to learning" (Limayem et al., 2007). Furthermore, Limayem et al. (2007) demonstrated the direct effect of habit on technology use and, subsequently, a more moderate effect of habit on intention to use technology—because the stronger the habit, the less important the awareness to use the technology. Experts argue that this behavior is subjective because repetitive behavior patterns that occur automatically outside of awareness

can only be reported or assessed by the user himself. Venkatesh et al. (2012) discovered two significant relationships: habitual intention to use and habitual usage, which have been studied in a variety of contexts, including the use of the Google search engine (Wu & Kuo, 2008) and ticket bookings via the app (Escobar-Rodríguez & Carvajal-Trujillo, 2014). Therefore, habits are thought to influence the intention to use and actual use of sharing economic applications during endemic times. Hence, the hypothesis can be stated as follows:

H6: There is a positive relationship between habit and behavioral intention to use sharing economy app.

H7: There is a positive relationship between the habit and actual use of the sharing economy app.

The moderating effect of COVID-19 awareness level

The context of COVID-19 may have a moderating effect (García-Milon et al., 2021) by conditioning or modifying behavior and usage intensity, such as the intention to use mobile applications. Therefore, this study included the level of awareness of COVID-19 as a moderating variable. The authors adopted two survey studies from (Saefi et al., 2020) and (Rehman et al., 2021) which categorize awareness into two, namely knowledge and attitude. The current study also developed the study of García-Milon *et al.* (2021) who examined the moderating impact of COVID-19 in the context of tourism. Within the UTAUT framework, the following hypothesis was made because of the need to study how users accept sharing economy apps in the endemic period:

H8a-g: Level of COVID-19 awareness moderate the relationship between predictor variables (PE, EE, SI, PSO, HE, and HAB) and intention to use sharing economy app.

H8h: Level of COVID-19 awareness moderate the relationship between behavioral intention and the actual use of sharing economy app.

METHODS

Design

A quantitative design was employed to fulfill the research aims. To gather the reliable and accurate data, this study adapt online survey

and maximizing an online questionnaire created via Google Formulir. The collected primary data based on the sampling criteria was analyzed using structural equation modeling (SEM) and Partial Least Squares (PLS).

Sample procedures and data collection

The object of this research focuses on the millennial generation (26–40 years old) in Indonesia who have the least experience with a mobile sharing economy (SE) application services, namely Gojek. This "decacorn" company was chosen because the transportation and food delivery services have proven to be a support for merchant and consumer activities during the pandemic and the new normal. Furthermore, the sample selection technique uses purposive sampling, also commonly known as jselective, judgement or subjective sampling. In more detail, the purposive homogeneous sample was chosen because the sample members have shared characteristics or a relatively similar set of characteristics (Cooper & Schindler, 2014), namely users who have downloaded the Gojek application and live (live or work) in big cities in Indonesia. The sample size refers to the maximum likelihood estimation method (Hair *et al.*, 2019), meaning that the minimum sample size is (25 indicators x 10) = 250 people.

To collect primary data, an online survey was implemented using the Google Forms feature (GoogleDrive) following expert recommendations in social science research (Fielding et al., 2017). The link containing the online questionnaire (e-form) is distributed randomly through various social media (Facebook, Twitter, and Instagram) and e-mail – while still ensuring the anonymity and confidentiality of the respondent's private data. Data collection was gathered for three months, starting from January 2022 to March 2022. After verification, the primary data that were eligible to be tested were 260 samples (millennial users of the Gojek sharing economy application in Indonesia).

Measurements

The online questionnaire is separated into two parts. Part I is designed to collect demographic information from respondents, namely gender, age, education level, and the type of service most frequently ordered on the Gojek application. Part II contains the latent constructs of the attributes of UTAUT2 theory (performance expectancy, effort expectatancy, social influence, hedonic

Table 1.
Measurement model evaluation

Variables and Items		Loadings	C.A.	C.R.	AVE
PE	I find the SE (Gojek) application useful to support my daily life	0.826			
	Using the SE (Gojek) application can increase my productivity	0.813	0.765	0.864	0.679
	Using the SE (Gojek) app helped me get things done faster	0.834			
EE	I am easy to get used to using the SE application (Gojek)	0.854			
	I feel comfortable using the SE application (Gojek)	0.862	0.792	0.878	0.706
	I quickly understood the use of the SE application (Gojek)	0.804			
SI	People who are valuable to me encourage me to use the SE application (Gojek)	0.791	0.763	0.863	0.678
	People who are important to me find the SE application (Gojek) helpful.	0.836			
	Important people in my life believe using m-commerce applications is a good choice.	0.842			
PSO	By comparing prices offered through the SE application, I can save money (Gojek)	0.715	0.727	0.847	0.650
	I prefer to find the lowest price in the SE app (Gojek)	0.853			
	I believe the price I paid for the SE application (Gojek) was reasonable.	0.844			
HE	I thoroughly enjoyed using the SE app (Gojek)	0.839			
	When using the SE application, I am very entertained (Gojek)	0.879	0.773	0.868	0.687
	I am overjoyed when using this application (Gojek).	0.765			
HAB	I'm used to the SE application (Gojek)	0.823			
	I should really utilize the SE application (Gojek) to fulfill my daily needs.	0.800	0.760	0.862	0.675
	I recommend the use of the SE application (Gojek)	0.842			
BI	I plan to conduct future transactions using the SE application (Gojek).	0.789	0.786	0.875	0.700
	I will attempt to use the SE application (Gojek) for day-to-day transactions.	0.851			
	I intend to use the SE application frequently (Gojek)	0.868			
AU	"In a week, how often do you access the SE (Gojek) application to transact during the post-COVID-19 period?" with a scale of 1 = never at all and 5 = several times a day	0.926	0.836	0.924	0.859
	"How many times per week do you use the SE (Gojek) application service during the post-COVID-19 period?" with a scale of 1 = never at all and 5 = several times a day	0.928			
LA	In times of endemic COVID-19, it is pertinent for me to keep informed.	0.855	0.802	0.895	0.732
	In endemic times, it is important for me to remain aware of the COVID-19 virus.	0.799			

Notes: LA:Level of COVID-19 Awareness; AU: Actual Usage; BI: Behavioural Intention; PE: Performance Expectancy; EE: Effort Expectancy; PSO: Price-Saving Orientation SI: Social Influence; HM: Hedonic Enjoyment; HAB: Habit

enjoyment, price-saving orientation, habit, behavioral intention, and actual use), which have been adapted and then modified according to previous research studies (Anwar et al., 2021; Limayem et al., 2007; Suh & Cheung, 2017; Tamilmani et al., 2022; V. Venkatesh et al., 2012). For the moderator, the item on the level of awareness of COVID-19 was adapted from the survey (Rehman et al., 2021; Saefi et al., 2020). On a five-point Likert scale, 1 = "Strongly Disagree," 2 = "Disagree", 3 = "Slightly Agree", 4 = "Agree", 5 = "Strongly Agree".

Data statistical analysis

All hypotheses developed were tested using Structural Equation Modeling (SEM). A two-stage analytical procedure was performed

using Smart-PLS 3.0. SEM is considered a suitable statistical tool for this study because PLS-SEM can handle complex models in which there are many variables or constructs, which test for mediating or moderating relationships (Sarstedt et al., 2021). Also, the current study involves testing a theoretical framework based on a predictive point of view. This justifies the use of PLS-SEM (Ringle et al., 2018) by giving new observations from the inside and outside the sample.

RESULTS AND DISCUSSION

Respondents

The characteristics of Gojek's sharing economy users by gender indicate that most of respondents are women, with a percentage of

Tabel 2.
Validity for discrimination using the Fornell-Larcker criteria

	Mean	Standard Deviation	AU	BI	EE	HAB	HE	LA	PE	PSO	SI
AU	3.76	0.63	0.927								
BI	3.71	0.64	0.509	0.836							
EE	3.74	0.67	0.521	0.500	0.840						
HAB	3.79	0.56	0.679	0.634	0.515	0.821					
HE	3.88	0.62	0.724	0.636	0.611	0.693	0.829				
LA	3.77	0.66	0.491	0.570	0.549	0.549	0.475	0.828			
PE	3.88	0.67	0.510	0.533	0.506	0.580	0.608	0.521	0.824		
PSO	3.80	0.64	0.665	0.665	0.577	0.642	0.580	0.573	0.630	0.806	
SI	3.76	0.61	0.614	0.594	0.691	0.622	0.583	0.523	0.586	0.677	0.823

Notes: Square roots of Average Variances Extracted (AVEs) are shown diagonally (in bold).
LA:Level of COVID-19 Awareness; AU: Actual Usage; BI: Behavioural Intention; PE: Performance Expectancy; EE: Effort Expectancy; PSO: Price-Saving Orientation SI: Social Influence; HM: Hedonic Enjoyment; HAB: Habit

56.1%, and men, with a percentage of 43.9%. In terms of age (millennial proxy 26–40), almost all are in the productive age range, namely 26–30 years (34.7%) and 31–35 years (40.4%). In terms of education level, the majority of millennial, or 83.9 percent, already have a Bachelor's degree (S1), and the rest are a Master's degree (S2) and a Doctoral (S3). Finally, it was reported that the most frequently used types of services were GO-RIDE (motorbike shuttle) (39.2%), GO-FOOD (food delivery) (37.3%), and GO-SEND (package delivery) (27.7%). With regard to marketing strategy, respondent demographics have always been the most important assumption in managerial decision-making, especially in SE companies.

Outer model evaluation

The first step in evaluating PLS-SEM results involves testing the measurement model (outer model), which is part of the SEM model that describes the relationship between latent variables and their indicators (Garson, 2016). The first step in the assessment of the reflective measurement model involves testing the load indicator (loading factor), where the test results of all measurement items are greater than 0.7. Thus, the item is declared valid to measure the variable. The second step is to assess the reliability of internal consistency by referring to the Composite Reliability (CR) and Cronbach Alpha (CA) values, where the results of data processing show that all variables have CR and CA values greater than 0.7. Thus, all variables are declared to meet the reliability requirements. The third step evaluates convergent validity through the Average Variance Extracted (AVE) value for all items in each construct. Based on the results, all values are greater than 0.5, so the AVE criteria are accepted. The fourth step is to assess discriminant validity with the Fornell-Larcker criteria. Based on the test results, the AVE root for all constructs has a greater value than the quadratic correlation with other constructs. Thus, discriminant validity was confirmed. The test results of the outer model are presented in Tables 1 and 2.

Inner model evaluation

Before evaluating the structural model in PLS-SEM, the Variance Inflation Factors (VIF) values are examined to ensure the model does not demonstrate any signs of collinearity. Ideally, the VIF value should be close to or less than 3, and if it exceeds 5, critical collinearity between construct indicators is detected (Chin, 2010). All VIF values for each construct are below 3, indicating that there is no multi-colinearity issue. Also examined are the R-Square (R^2) values for each endogenous latent variable. The R^2 BI and AU values are 0.743% and 0.579%, respectively, which shows that the model is good enough to make accurate predictions (Chin, 2010).

The results of hypothesis testing for each latent variable relationship are presented in Figure 3. To assess all relationships between variables, beta coefficients, and appropriate significance (t and p values), a non-parametric bootstrapping procedure (SmartPLS 3.0) was applied by doubling the subsample by 1,000 (Hair et al., 2017). The t-table cut-off value for 95% confidence level (5%) and degrees of freedom (df) = n-2; 220-2=218 is 1.99. Hypotheses 1–8 predict the direct effect of exogenous UTAUT2 on endogenous variables.

Table 3.
Hypothesis testing results (*bootsrapping*)

H	Direct Effect	*Std. β*	Std. Error	t-value	p-value	Decision
H1	PE → BI	0.225	0.090	2.503	0.016	Significant
H2	EE → BI	0.329	0.092	3.576	0.001	Significant
H3	SI → BI	0.304	0.086	3.534	0.001	Significant
H4	PSO → BI	0.407	0.101	4.072	0.000	Significant
H5	HE → BI	0.148	0.114	1.298	0.200	*Insignificant*
H6	HAB → BI	0.310	0.102	3.039	0.004	Significant
H7	HAB → AU	0.456	0.095	4.800	0.000	Significant
H8	BI → AU	0.392	0.104	3.769	0.000	Significant
H9	**Moderation Effect**	***Std.β***	**Std. Error**	**t-value**	**p-value**	**Decision**
H9a	PE*LA → BI	0.167	0.064	2.609	0.010	Significant
H9b	EE*LA → BI	0.155	0.072	2.153	0.036	Significant
H9c	SI*LA → BI	0.124	0.086	1.446	0.154	*Insignificant*
H9d	PSO*LA → BI	0.105	0.090	1.170	0.248	*Insignificant*
H9e	HE*LA → BI	0.080	0.134	0.597	0.553	*Insignificant*
H9f	HAB*LA → BI	0.133	0.082	1.622	0.111	*Insignificant*
H9g	HAB*LA → AU	0.176	0.075	2.347	0.023	Significant
H9h	BI*LA → AU	0.167	0.064	2.609	0.010	Significant

*Notes: Significance at: P-value p < 0.01, p < 0.05 and T-statistics > 1.98. *Interaction Effect of Moderating Variables*
AU: Actual Usage; BI: Behavioural Intention; LA: Level of Awareness; PE: Performance Expectancy; EE: Effort Expectancy;
PSO: Price-Saving Orientation SI: Social Influence; HM: Hedonic Enjoyment; HAB: Habit.

Table 4.
Results of PLS-SEM model prediction strength tests (PLSpredict)

Endogenous Constructs	PLS SEM		LM	(PLSEM-LM)	Interpretation (*predictive power*)
	RMSE	*Q²_predict*	*RMSE*	*RMSE*	
AU1	0.604	0.407	0.642	*-0.038*	
AU2	0.627	0.388	0.647	*-0.020*	
B1	0.681	0.579	0.797	*-0.116*	High
B2	0.460	0.519	0.521	*-0.061*	
B3	0.549	0.313	0.602	*-0.053*	

Note. AU: Actual Usage; BI: Behavioural Intention
RMSE: Root-mean-square error; LM: Linear regression model

The results of the tests revealed that performance expectancy (ß = 0.225, t = 2.503, p < 0.05), effort expectancy (ß = 0.329, t = 3.576, p < 0.001), social influence (ß = 0.304, t = 3.534, p < 0.05), price-saving orientation (= 0.407, t = 4.072, p < 0.001), and habit (ß = 0.310, t = 3.039, p < 0.05) had a positive and significant effect on behavioural intentions. Furthermore, a positive and significant effect of behavioural intentions (ß = 0.392, t = 3.769, p < 0.001) and habit (ß = 0.456, t = 4.800, p < 0.001) on actual usage were confirmed. In contrast, hedonic enjoyment was found to have no significant effect on behavioural intentions. Thus, seven hypotheses (H1, H2, H3, H4, H6,

H7, and H8) were accepted, and one hypothesis (H5) was rejected. In addition, H9 (H9a-h) confirmed the moderating role of the level of COVID-19 awareness variable in the direct relationship between variables.

Based on the test results, the level of consumer awareness of SE towards COVID-19 (attitude and knowledge) was found to strengthen all direct relationships, but with different results of significance. Six moderation pathways (H9a, H9b, H9c, H9f, H9g, H9h) were significant, and two paths (H9d and H9e) were not significant. Thus, partially, six sub hypotheses (H9a, H9b, H9c, H9f, H9g, and H9h) were accepted, while the other two (H9d and H9e) were rejected.

Predictive power evaluation

To assess the predictive power of the model (PLSpredict), researchers can use several predictive statistics that measure the number of prediction errors in certain endogenous construction indicators. The most popular metric for measuring predictive error rates is the root-mean-square error (RMSE). In most cases, researchers should use RMSE to assess the model predictive power. To interpret this metric, researchers need to compare the RMSE value of each indicator with the benchmark naïve linear regression model (LM) (Shmueli et al., 2019). The LM value was obtained by running linear regression of each dependent construct indicator on the exogenous construct indicator in the PLS path model. As shown in Table 4., most of the endogenous indicators show that the RMSE value of the PLS-SEM is smaller than the RMSE value of the naïve LM benchmark. Hence, it can be concluded that the test model is good at predicting both millennial intention to use the sharing economy app and their actual use of the app.

Discussion

Performance expectancy has a significant and essential effect on the behavioral intention of using the Gojek sharing economy application among millennial and these results recorroborate previous research (Palau-Saumell et al., 2019; Yuduang et al., 2022). As expected, when transacting through the Gojek application, users get great benefits because their daily productivity targets can be achieved effectively and efficiently only through their mobile phones. For example, millennial has to work regularly to maximize great benefits from booking Go-ride or Go-Car services (motorbikes or cars).

Effort expectancy has a significant effect on the behavioral intention of using the Gojek application among Indonesian millennial, where these results contradict previous research (Chan et al., 2021; Li & Fang, 2022). In this study, Gojek users have a positive intention to continue to order via app as the feature is efficient, and easy to find product or service information. This is especially important for respondents living in urban areas, as they need a high level of mobility to sustain their activities.

Social influence has a significant impact on behavioral intention to use the Gojek application, which is in line with prior works (Chopdar et al., 2018; Poon & Tung, 2022). This explains that friends, peers and family members play a crucial role in promoting and encouraging the use of Gojek app. It also proves that respondents highly respect the opinions or recommendations from those who are important to their life. Moreover, comments from well-known or famous experts are considered valuable to drive their intention to use certain device technology.

Price-saving orientation (extended construct) confirmed a significant direct driver of behavioral intention for the use of sharing economy applications. These results are consistent with previous study (Palau-Saumell et al., 2019). This is reasonable as the greater the financial savings (or the possibility to get a better product or service at a certain price through price comparison) through direct transactions in the Gojek application, the greater their intent to use it in the future. This is especially true for food delivery services like Go-Food, which already have a long list of food and drink entrepreneurs and let users search for the cheapest price.

Hedonic enjoyment (extended predictor) is the only exogenous variable that has an insignificant effect on Indonesian millennial behavioral intention to use sharing economy app. This result differs from earlier research (Suh & Cheung, 2017) that raised the issue of computer technology usage in general. This can, of course, be justified differently due to the fact that the majority of Gojek users in this study are employed and have a relatively high level of education (S1), so they are more inclined toward utilitarian consumption than hedonic consumption. The users perception of Gojek mobile app is not a platform for recreation or leisure time. This study is among the most influential in explaining these findings.

Consistent with previous research, habit was found to have a significant relationship with the intention to use and actual use of the Gojek sharing economy for transactions (Escobar-Rodríguez & Carvajal-Trujillo, 2014; Limayem et al., 2007; Wu & Kuo, 2008). This is further explained by the fact that, in the context of the pandemic in Indonesia, Gojek has become the most trusted application for meeting the needs of respondents despite physical and social constraints. Upon entering the endemic phase, the usage graph exhibits an upward trend, as users are already familiar with the application. The best predictor of actual use is habit, therefore sharing economy managers should consistently execute marketing and communication strategies that drive regular use of this technology.

This study also found the significant correlation between behavioral intention and actual usage of Gojek's sharing economy application services in Indonesia. In other

words, the greater intention can result to the greater likelihood of a purchase directly through the app. It is evident that Gojek's marketing team should strive to increase users' intentions to use their application for transactions, as this will result in greater application usage.

Last, this study investigated the moderating effect of the COVID-19 awareness level (model extension) on all tested direct relationships. The results indicate that all interactions are positive, indicating that the user's knowledge or attitude toward COVID-19 reinforces the intention to shop via the sharing economy. This may indicate that users have a solid grasp of how to deal with the pandemic, making them more confident and unconcerned about using sharing economy applications during epidemics. This discovery may also mean that companies no longer need to develop marketing strategies utilizing the term COVID-19 or similar terms.

CONCLUSION

This paper develops the (grand) theory of UTAUT2 to explain behavioral intention and actual use of ordering direct products or services via mobile applications in the sharing economy in Indonesia. Six variables (performance expectancy, effort expectancy, social influence, price-saving orientation, and habit) were found to have a significant effect on behavioral intention ($R^2 = 0.743$), while one variable (hedonic enjoyment) was the opposite. Millennials' actual use of sharing economy applications was also found to be significantly affected by their habit and behavioral intention ($R^2 = 0.579$). Subsequently, testing the moderator variable, namely the level of COVID-19 awareness, was shown to simultaneously strengthen and weaken the interaction between variables. In conclusion, the findings of this study theoretically expand the generalizability and applicability of the UTAUT2 model in a variety of contexts. This study also contributes to the under-explored characteristics of UTAUT2 (price-saving orientation, hedonic enjoyment, and COVID-19 awareness level).

The results of the structural model analysis offer potential managerial implications for the SE business, and also for other stakeholders that are relevant. Referring to the results, the person in charge of the SE application should proactively encourage users to develop their usage habits on a regular basis by providing creative and targeted service content. For example, SE managers should further promote additional marketing activities, such as discount offers or loyal customer packages, because users are potentially receptive to using apps that have become part of their daily routine. On the other hand, considering that hedonic fun does not have a significant effect, SE managers can integrate gamification technology to make users feel happy when entering applications, such as simple games in Shopee or Tokopedia mobile commerce applications. Lastly, the discount or low-price offers must be keep maintained as it become fundamental marketing strategies to satisfy user's needs and wants on the platform.

Limitations and future research suggestions

Despite contributing to the field, this research has several limitations. First, the focus of the present study is limited to Indonesia. Therefore, it is anticipated that future research will expand generalizations to include respondents from multiple countries, particularly Southeast Asia. Second, this study only employs a quantitative approach grounded in positivism; therefore, it is recommended that future research employ qualitative or mixed methods in order to acquaire a more profound and comprehensive perspective on the phenomenon of mobile app use among millenial. Thirdly, the data collection for this study focuses primarily on urban residents with sufficient ICT knowledge and experience to operate SE applications. It is hoped that future research will also include suburban and rural residents in order to provide broader perspectives. Considering that the potential for developing the UTAUT2 model is still substantial, several key variables in the interaction of human relations with computer technology are recommended, including mobile self-efficacy, data security or privacy perceptions, and gamification.

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