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Technology anxiety and social influence towards intention to use of ride-hailing service in Indonesia

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ABSTRACT

Ride-hailing service has been emerging not only to change dramatically the way people commute, but more importantly, it also generates various opportunities. However, given all the benefits offered by this service, its acceptance is still challenging. This research aims to investigate as to how technology anxiety and social influence as the antecedents to ride-hailing acceptance can be effectively mediated by valence factors positively and negatively. A total of 251 valid respondents is collected and analysed using Structure Equation Modelling (SEM). The findings reveal that while the positive valence (functional, economic and social) significantly mediate the social influence, the negative valence (privacy risk and learning cost) only mediates technology anxiety. The findings also demonstrate that both valences significantly influence the attitude towards the intention to use the ride-hailing sharing service, but privacy risk. Theoretically, this research shed more light on the literature of ride-hailing adoption by improving our understanding of what and how the valence factors play the role of a comparative analysis tool for the individuals to adopt the service. Practically to the ride-hailing provider, this lesson learnt demonstrates how the valence factors can be used at increasing the adoption rate of the service. Limitations and future research directions are also discussed.

1. Introduction

Understanding a technology adoption essentially has been a continuous concern in Information System (IS) field (Davis, 1989). There are various factors contributing to the way individuals accept technology. These factors can be positive and negative, and they can be from internal and external of individuals. The ride-hailing technology is also no different. It is widely accepted that the perceived usefulness and the perceived ease of use in the Technology Adoption Model (TAM) (Davis, 1989) are the main determinants that contribute to influencing the adoption of the technology itself. While TAM, in particular, has received strong support in explaining innovative technology acceptance, it has also received several criticisms (Wang et al., 2018). A critic of TAM, for instance, is that it only portrays the consumers' positive perceptions of support factors of the technology acceptance and omits their negative ones (Tsai et al., 2020; Ghasemaghaei, 2020; Nguyen et al., 2019; Heinonen, 2018; Wang & Yu, 2017). As there are options towards the intention to adopt a ride-hailing service (Chalermpong et al., 2022; Almunawar et al., 2020), individuals will typically perform a comparative analysis prior to accepting one they are comfortable with. They assess the values of product utility that benefits and costs them (Zhu et al., 2017).

In the literature of valence theory (Carruthers, 2018), it describes that "*valence is a central component of all affective states, including pains, pleasures, emotions, moods, feelings of desire or repulsion*" (p. 658). It is commonly regarded to be intrinsically motivating and to play a critical role in affectively motivated decision making. When making a choice or deciding to accept a new technology, individuals envision the actions and results in issue and reacts to them emotionally. The individuals essentially considers both positive (e.g. functional, economic values) and negative (e.g. perceived risk, learning factors) values of the technology before deciding to adopt one (Zhu et al., 2017). This concept of

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value is fundamental to understanding the consumer behaviour (Gallarza et al., 2011). Valence theory to understand users' behaviour to adopt new technology has been utilised in various fields, ranging from e-commerce (Hajli, 2019), big data analytics usage (Ghasemaghaei, 2020), social commerce (Wang & Yu, 2017), mobile payment (Ozturk et al., 2017) and personal cloud service (Moqbel et al., 2017). However, there is a dearth of literature as to how the valence theory is employed as a decision-making tool as to how prospective consumers accept a particular ride-hailing technology (Zhu et al., 2017). In addition, although harnessing TAM facilitates and improves the understanding and the adoption levels better, however, the adoption of ride-hailing services still lack variation in terms of adoption factors and theoretical evidence from different contexts and socio-demographic backgrounds. For instance, as this research is about understanding the ride-hailing service adoption, it is not an overly assumption that there must be an apprehensive feeling of individuals that influence new technology adoption. It is common sense that technology anxiety might be experienced differently by individuals from different backgrounds. There must also be an influence from the social environment toward the intention to use new technology. Thus, this study aims to expand our understanding of the individual behavioural intention to adopt a particular ride-hailing service based on these factors. This sheds more light on the extant literature of mobile ride-hailing theoretically and it contributes to an understanding of the factors that might contribute to increasing the adoption rate it, practically.

This study employs GO-JEK ride-hailing service in Indonesia as a case study for both two-wheeled (GoRide) and four-wheeled (GoCar) services. To date, GO-JEK has been operationalised in 167 cities in Indonesia (more than 200 cities in South East Asia), partnered with more than 2 million drivers and supported the income generation of more than 0.9 million various merchant partners (e.g. street food restaurants, home and micro, small and medium industries, etc.) with more than 100 million transactions per day (Andriani, 2019). It is also a native and becoming the first of Indonesia company achieving a decacorn status (a company by which its market value is worth more than the US $10 billion) since 2019 (The Jakarta Post, 2019). Among the ride-hailing services operated in Indonesia, GO-JEK is the most popular (Jakpat, 2020). 90% of the total GO-JEK user is in Indonesia (Eka, 2020). GO-JEK has enabled a massive and intensive sharing economy using its platform. In addition, it also changes the way people commute and interact socially in an effective and efficient manner.

Notwithstanding all the benefits and features offered by GO-JEK, its adoption rate is not automatically accelerated. To access the service, one can do by only using their smartphone from anywhere and anytime. One only needs to have a smartphone and registered mobile phone number. More than 355,5 million registered mobile phone numbers have been reported in Indonesia until 2019, and 60% or 213 millions of them are smartphone users (We Are Social, 2019). This figure represents a little over 80% of Indonesia's total population (Badan Pusat Statistik, 2020) which are the prospective users of GO-JEK. However, statistically, there are only a little over 29 million GO-JEK monthly active users in Indonesia. Thus, the slow rate of GO-JEK adoption is the issue the paper aims to investigate.

As indicated earlier, previous studies have attempted to understand the intention to adopt ride-hailing services (Chalermpong et al., 2022). In fact, the technology perspective, e.g., technology anxiety, and social one, e.g., social influence, play an essential role as determinants of individuals' decisions of their acceptance of the technology itself. However, as described earlier, most previous scholars only portray these factors from a positive perspective. While at the end of the day, individuals' decision-making processes are based not only on positive but also negative values. Thus, we aim to contribute to this study by introducing the valence values, positive and negative, to mediate the technology and social influence factors in ride-hailing service adoption.

This paper is composed of six sections. The first section, the Introduction, describes the justification of the issues that need to be addressed. In the second section, the Theoretical Background elaborates the theories and the concepts underpinning the research. In the third section, the hypotheses of the research are developed. The fourth section presents Research Methodology followed by Data Analysis and the Discussion and Conclusion in the fifth and sixth sections respectively. The limitation and feature research directions are also overviewed in the last section for further research.

2. Theoretical background

2.1. Technology acceptance of Ride-Hailing services

Various scholars have attempted to investigate the underlying factors that contribute to ride-hailing acceptance. The motives are simply because the diverse background and context might affect differently the ride-hailing adoption. Thus, a comprehensive understanding of these factors towards technology adoption is an important (Goel & Haldar, 2020; Fu, 2020; Almunawar et al., 2020; Akbari et al., 2020; Wang et al., 2019; Septiani et al., 2017). Among the scholars in this field, Wang et al., (2018) for instance, show that personal innovativeness and environment awareness statistically influence the intention to accept the ride-hailing service. While the awareness of the environment is also seen as one of the determinant factors of its adoption in India (Goel & Haldar, 2020), personal innovativeness is perceived as among the underlying factors contributing to the ride-hailing adoption by Chinese taxi drivers (Liu & Xu, 2018). The popularity of ride-hailing in Iran was previously investigated its adoption by Akbari et al. (2020). Grounded on TAM, trust is seen as the determinant factor to the usage intention. In particular in Indonesia, the acceptance of ride-hailing services was also examined by Almunawar et al. (2020). The authors aim to scrutinise its adoption in Indonesia by extending the UTAUT theory with three additional constructs: hedonic motivation, price value and habit. Although Almunawar et al. (2020) contributes to deepening our understanding of ride-hailing acceptance in Indonesia, however, their motive was different from ours, that the acceptance of emerging technology is determined not only by the positive perceptions but also by the negative ones as well. Our view is similar to Wang et al. (2019) in that we aim to discern the intention to use the ride-hailing service by presenting both positive and negative factors as the nature of human beings before continued use it.

2.2. Valence theory

Valence is an emotional level of an individual toward a decision making mechanism (Peter & Tarpey, 1975). Valence theory, which has roots in economics and psychology, employs a behavioural consumer decision-making paradigm (Peter & Tarpey, 1975). It is defined as "*the degree of positive or negative feeling toward a certain option*" (Sarker et al., 2005, p. 41). This feeling could be negative or positive (Carruthers, 2018). It represents emotional quality of an individual. It is not only a fundamental property of emotional experience, but also a fundamental aspect of the emotional response (Helversen et al., 2019).

Individuals identify a product or service with negative (e.g. privacy risk) and positive (e.g., economic benefit) aspects. According to the valence theory, consumers aim to reduce the negative features of a product or service while maximizing the good aspects and balancing the utilities to obtain a net valence (Peter & Tarpey, 1975). In other words, customers want to get the maximum value out of their purchases (Heinonen, 2018). Valence theory has been adopted with various theories, for instance, incorporating it with social comparison theory for individual, distributed valence model for subgroup and group valence model for group levels (Sarker et al., 2005), TAM (Wang et al., 2019) and UTAUT (Almunawar et al., 2020) for understanding the adoption of new emerging technology.

Employing the valence theory to understand the decision to adopt a ride-hailing technology is the nature of individuals. That is applying cost-benefit analysis to decide something new to them before adopting

it. Therefore, it is not an overly idea that this approach is utilised in the behavioural intention paradigm. In this research, valence theory is employed to explain individuals' decision-making progress regarding the ride-hailing adoption, GO-JEK. While positive valence supports the attitude towards mobile ride-hailing adoption, the negative valence is otherwise. The indicators for the positive valence are functional values, the functionalities of the mobile ride-hailing perceived by individuals; economic value, the economic benefits perceived by individuals; and social value, social benefit perceived by individuals towards adopting the technology (Wang et al., 2018). On the other hand, the negative valence indicators consist of privacy risk and learning cost. While privacy risk is the risks perceived by individuals during the use of mobile ride-hailing, for instance, personal data breaching because of the technology itself or stealing, the learning cost is efforts put by individuals who aim to utilise the new technology.

2.3. Technology anxiety

Technology anxiety has been a concern in the IT adoption (Heinssen et al., 1987). It is essentially related to computer anxiety, an apprehensive feeling of an individual regarding the ability or intention to adapt to a new technology (Venkatesh et al., 2003). Various factors determine technology anxiety, they are experience, age, gender, self-efficacy, to name a few (Tsai et al., 2020; Kamal et al., 2020). Technology anxiety perceived can also lessen the mentality to accept a new technology which essentially can benefit the performance of the individual (Gelbrich & Sattler, 2014). In the context of technology-based service adoption, technology anxiety is key to determining this (Meuter et al., 2013). Therefore, it is important to investigate the technology anxiety, an apprehensive feeling perceived by individuals towards the use of mobile ride-hailing applications, in the context of the research is GO-JEK services, GoRide and GoCar.

2.4. Social influence

According to Venkatesh et al. (2003), social influence has an impact on individual behaviour through three mechanisms: compliance, internalisation, and identification. While the latter two relate to altering an individual's belief structure and/or causing an individual to respond to potential social status gains, the compliance mechanism causes an individual to simply alter his or her intention in response to the social pressure, i.e., the individual intends to comply with the social influence (p. 452). In the context of the research, identification is a behavioural change of individuals to adopt the mobile ride-hailing application as a result of conforming to the social environment that has been widely used it. Internalisation is a changed behaviour to use the mobile ride-hailing application based on the psychological pressure from the environment. In other words, as GO-JEK services have been adopted by a community and there is an individual who is part of it but not following the community's trend, the rest in the communities might simply negate the individual presence in the community. And compliance is about changing behaviour as there are no other options perceived by an individual but adopting the new technology that the community does. Put simply, social influence is related to individual behaviour, attitude, and emotion, conscious or unconscious, as a result of the interaction with the social environment (Kamal et al., 2020; Moussaıd et al., 2013). Therefore, in this research, social influence is crucial to be examined as a factor that affects the adoption of mobile ride-hailing services, in this research is GO-JEK service: GoRide and GoCar.

3. Hypotheses development and research model

An intention to use a mobile ride-hailing application is influenced by various factors. Technology anxiety is one of them. It is an apprehensive state of mind of someone describing an individual's capability and eagerness to confront a new technology for the first time (Venkatesh et al., 2003). To be able to comprehensively understand as to how an individual makes a decision to adopt this particular technology, the technology anxiety should be comprehended along with the social influence, "*the degree to which an individual perceives that important others believe he or she should use the new system*" (Venkatesh et al., 2003, p. 451). In this context, the social influence is a condition in which the belief of an individual is revised or adapted to a new adjustment in adopting a particular technology as a result of an interaction with others (Moussaıd et al., 2013). The research model is drawn in Fig. 1.

3.1. The relationship between technology anxiety and positive valence

There are various factors, be it positive and/or negative, that might relate to individuals' feeling to adopt a technology. In this research, the positive factors are functional, economic, and social values. In this particular relationship, individuals who experience technology anxiety perceive an apprehensiveness feeling in using the services as it is simply a new technology for them (Venkatesh et al., 2003). This feeling might end up in the conclusion that the service brings no usefulness in their daily activities.

On the other hand, this ride-hailing service offers various benefits objectively to the individuals, among them are functionality, economics, and social values. The functional value is related to a feeling perceived by an individual regarding the functionalities offered by services (Hou et al., 2020). The next factor is the economic value. It is a factor related to the economic benefits in return perceived by individuals once they have adopted a new technology product or service (Al-Debei & Al-Lozi, 2014). In their study, Wu et al. (2017), for instance, find out one of the ways to motivate individuals to adopt or to retain the use of the mobile payment system is by offering gifts or discounts or redeemable points. This is because the economic value perceived by individuals is valued for money for them if they use it (Dann et al., 2020; Wang et al., 2018; Kim et al., 2015). The next positive valence is social value. Social value is defined as "*the pleasure, satisfaction, and gratification individuals derive from participating in interpersonal interactions*" (Jiang et al., 2013, p. 582). Thus, this value is about expressing a social status in an interrelationship of individuals with their peers (Hou et al., 2020). In other words, the concerns of the individuals in using a new product or service is about the prestige or self-esteem (Dann et al., 2020).

As earlier described, based on valence theory individuals try to maximise the positive aspects of a product or service and minimise the negative ones. Thus, perceiving these benefits out of this particular service will weaken the technology anxiety perceived by individuals. This in turn will lead the service to be adopted by individuals. Withstanding these descriptions of the relationships between the technology anxiety and the positive valence, the following hypotheses are constructed:

H1: Technology anxiety significantly influences the functional value perceived by an individual.
H2: Technology anxiety significantly influences the economic value perceived by an individual.
H3: Technology anxiety significantly influences the social value perceived by an individual.

3.2. The relationship between technology anxiety and negative valence

On the other hand, technology anxiety can also influence negative values: privacy risk and learning cost. Both are the determinant factors that negatively contribute towards the attitude to the technology adoption. In other words, both values are perceived as the impeding factors by individuals who intend to adopt the ride-hailing services (Ghasemaghaei, 2020). Privacy risk is recognised as the uncertainty of risks of individual data that cannot be controlled by them (Ozturk et al., 2017). It is related to the concern of the individuals of their information disclosure without consent. In a similar vein, the learning cost is related

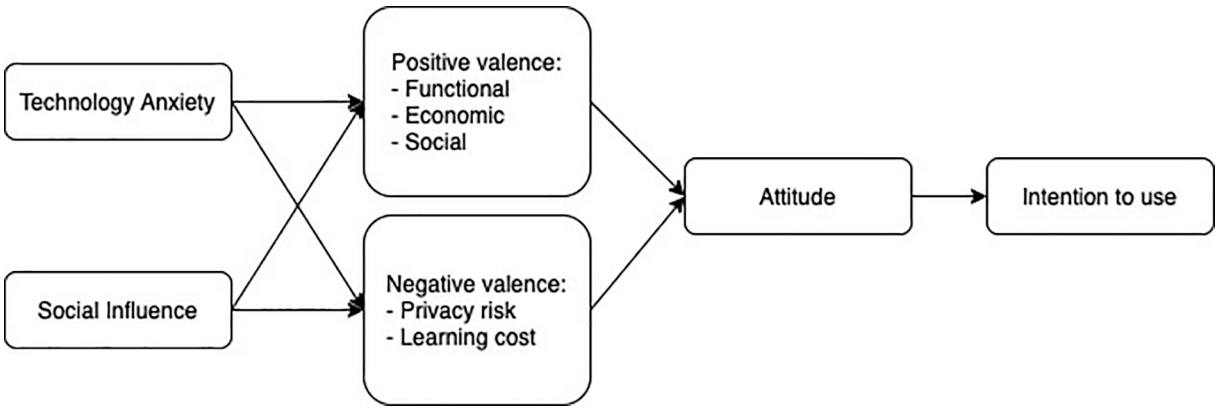

Fig. 1. Proposed Research Model.

to the efforts individuals are concerned about towards their intention to accept the ride-hailing service (Molina-Castillo et al., 2020; Tsai et al., 2019). As the service is the new technology for the prospective users, the learning processes might be the hindrance perceived by them to adopt it. For these prospect users, these negative values will magnify the technology anxiety states as they see that these services will take time to be familiar with. They see that they have no prior nor sufficient knowledge that can assist them to adopt the application easily. In addition, the learning cost perception perse does not only take place before the adoption but could also remain after it (Polites & Karahanna, 2012). As such, we hypothesise that:

H4: The technology anxiety significantly influences the privacy risk perceived by an individual.
H5: Technology anxiety significantly influences the learning cost perceived by an individual.

3.3. The relationship between social influence and positive valence

Previous studies indeed have explored social influence as a determinant in technology adoption, for instance in here (Venkatesh et al., 2003; Davis, 1989). One typical rationale is that an invention causes prospective adopters to be unsure about its predicted implications. Individuals are often uncomfortable with ambiguity. Therefore, they will turn to their social network for advice on their adoption choices, which will be influenced by both informational and normative social factors (Lu et al., 2005; Venkatesh & Morris, 2000). In the context of this relationship, the individuals subjectively acknowledge that the way others think about them in using new technology is an important factor that motivates their decisions to use it (Moussaıd et al., 2013). These values (functionality, economic and social) have persuasive effects that strengthen individuals to adopt the service. The functional value describes the functionalities offered by these services, for instance, whether they fit with the needs of the individuals to commute from one place to another, whether they are on time or whether the drivers have already mastered the routes, etc. In a similar vein, the economic and social values are also viewed positively that drive individual towards the attitude of service adoption. Whether the cost is worth competing with similar services, the discount frequently offered, etc, are the economic values perceived by individuals. The social value might strengthen the social influence by appraising the benefits socially that might be obtained by individuals in adopting the services. This is the nature of human beings as they tend to seek social value by engaging in interpersonal interaction with others. Thus, we hypothesise that:

H6: Social influence significantly affects the functional value perceived by an individual.
H7: Social influence significantly affects the economic value perceived by an individual.
H8: Social influence significantly affects the social value perceived by an individual.

3.4. The relationship between social influence and negative valence

As the influence of positive values to the social influence previously described, in this relationship, the negative values also need to examine their effect on the social influence. In particular, the negative values are investigated whether or not they weaken the social influence of individuals towards the ride-hailing adoption of GO-JEK. As earlier described, privacy risk and learning cost factors are the negative values that might hinder the attitude of individuals to adopt ride-hailing services (Ozturk et al., 2017). While individuals might envision that their privacies might be exposed once they adopt the mobile-based application (Jiang et al., 2013), they also see that the adoption of the technology per se is challenging and therefore it will be costly for them to get used to (Molina-Castillo et al., 2020). Both feelings might be negatively contributed to the attitude toward the adoption of GO-JEK services. It is assumed that the individuals' social engagements might affect the way they view these negative feelings. In other words, the social interaction of the individuals might also influence these negative feelings. Therefore, in this research, we hypothesise that:

H9: Social influence significantly affects the privacy risk perceived by an individual.
H10: Social influence significantly affects the learning cost perceived by an individual.

3.5. The relationship between the positive valence and the attitude to use ride hailing service

The positive valence comprising the functional, economic, and social values are the positive feelings (Hou et al., 2020) perceived by individuals to their attitude towards the intention to use GO-JEK services. In this research, we see that these values perceived by individuals contribute to the attitude toward the adoption of the GO-JEK services, both GoRide and GoCar. Individuals envision that adopting these services will benefit them as these positive values the mobile ride-hailing services might generate (Almunawar et al., 2020). Thus, we hypothesise that:

H11: Functional value significantly affects the attitude towards the adoption of ride-hailing services.
H12: Economic value significantly affects the attitude towards the adoption of ride-hailing services.

H13: Social value significantly affects the attitude towards the adoption of ride-hailing services.

3.6. The relationship between the negative valence and the attitude to use ride hailing service

While the positive values contribute positively to the attitude towards GO-JEK services, the negative ones, on the other hand, the privacy risk and learning cost, negatively contribute to the attitude toward the use of the services (Jiang et al., 2013). In other words, as described earlier that the individuals' concerns about the privacy risk and the learning cost normally might be the hindrance toward the attitude of adopting GO-JEK services (Ozturk et al., 2017). This is not an overly assumption as these occur regularly to the other similar services. In addition, learning to familiarise the services might also be the impediments perceived by individuals for the technology to be adopted. Instead, the individuals might have other preferences for the typical services or there might be issues with perceived ease of use and usefulness with the services (Almunawar et al., 2020). These latter factors might impede individuals towards the attitude to adopt the services. Thus, we hypothesise that:

H14: Privacy risk significantly affects the attitude towards the adoption of ride-hailing services.
H15: Learning cost significantly affects the attitude towards the adoption of ride-hailing services.

3.7. The relationship between the attitude and the intention to use the ride-hailing services

The last relationship to be investigated in the proposed research model is between the attitude and the intention to use GO-JEK services. Essentially, this particular relationship has been largely examined in IS research employing various technology adoption models. Thus, it is not surprising that the evaluation of the attitude towards the adoption of a particular technology has adhered to these models/theories. In this research, we also aim to evaluate the attitude towards the intention to use GO-JEK's ride-hailing services: GoRide and GoCar. Thus, we hypothesise that:

H16: Attitude significantly affects the intention to use ride-hailing services.

3.8. Research Methodology

3.8.1. Sample

As earlier explained, our focus is to understand the intention to use of ride-hailing service in Indonesia. We employ GO-JEK as a case study. We seek to discern to what extent the technology anxiety and social influence as the antecedents contribute to the intention to use GO-JEK and particularly how the valence factors, both positive and negative, play a role as a decision-making tool to influence the usage intention. Consequently, we focus our sample on all Indonesians who have adopted GO-JEK services regardless of their ages, gender, marital status, or education level. For the sample gathering, we employ an online questionnaire as Covid-19 pandemic. Once we generated the questionnaire, it was subsequently sent to those who are the prospective participants. Those participants are identified with the help of each of the authors' friends. This research employs a convenience sampling technique for the data collection. This technique is also known as non-random or non-probability sampling as the target population meets certain criteria, e.g., accessibility, geographical proximity, willingness to participate. Out of 291 respondents who initially responded the questioners, only 251 of them can be processed further as they are those who completed the questioner. Table 1 depicts the detail of respondents' socio-demographic characteristics towards the duration and intention to use of the GO-JEK's services.

Table 1
Social-demographic respondents with duration and intensity of GO-JEK usage.

Variable	Category	Frequency	Percentage (%)
Age	< 17 years of age	5	2
	17–25	158	62,9
	26–35	19	7,6
	36–45	15	6
	46–55	51	20,3
	>55 years of age	3	1,2
Gender	Male	109	43,4
	Female	142	56,6
Education	Elementary	2	0,8
	Junior High School	1	0,2
	Senior High School	43	17,1
	Diploma	12	4,8
	Bachelor	166	66,1
	Master	24	9,6
	Doctorate	3	1,2
Marital Status	Single	181	72,1
	Married	70	27,9
GO-JEK' users	Yes	246	98
	No	5	2
Duration of GO-JEK use	< 1 month	5	2 %
	1–12 months	23	9,2 %
	> 12 months	223	88,8 %
Intensity of GO-JEK use	1–2 times a day	197	78,5 %
	3–5 times a day	37	14,7 %
	>5 times a day	17	6,8 %

Out of the total respondents, the number of respondents between female and male is quite proportional. Table 1 also shows that more than 80% of the participants has a higher education degree. In addition, Table 1 also informs that majority of the respondents are those who are single that comprises a slightly over 72%. Of all the respondents, nearly 90% of them have adopted GO-JEK services and almost 80% of them order it up to 2 times a day.

In this research, Partial Least Square-Structural Equation Modelling (PLS-SEM) of SmartPLS 3.0 is employed as an analysis tool. PLS-SEM is primarily used to develop theories in an explanatory research (Hair et al., 2011). SEM is characterised by its capability to estimate the relations of variables, describing the concept that has never been explored, and develop a model that defines all the existing relationships (Sarstedt et al., 2017). In addition, PLS-SEM is also suitable and works efficiently in handling small sample sizes (Hair et al., 2011) (See also these references (Sarstedt et al., 2017; Astrachan et al., 2014). A 251-valid respondent collected in this paper is definitely more than the ideal sample size in PLS SEM based on any metrics (for instance based on the "10-times rule" method of (Hair et al., 2011) or the "inverse square root" and gamma-exponential" methods of (Kock & Hadaya, 2018)).

There are two model types in SEM, measurement model and structural model or also known as an outer model and inner model respectively (Sarstedt et al., 2017). While the measurement model represents a theory specifying relationships between elements of a path model, the structural model is a theory describing as to how a construct is related to other constructs. As such, in this research PLS-SEM is employed as its nature as a tool to investigate the structures and the relationships between dependent and independent variables expressed in the formulation (Sarstedt et al., 2017). The Confirmatory Factor Analysis (CFA) as part of the SEM is used as the research model and the hypotheses have been explicitly stated. It also focuses on the modelling and the relationship between the observed indicators and the latent variables (Gallagher & Brown, 2013).

3.9. Measures

In this paper, all items are measured following 7-point Likert scales by which 1 (one) and 7 (seven) represent strongly disagree and strongly agree, respectively. All the measurement items employed in this

research are adopted and adapted from the existing works as they have been experiencing a suite of validation tests. For instance, the four measurement items of technology anxiety are adapted from the ones of here (Meuter et al., 2013). For the social influence, the three items are adapted from here (Nysveen et al., 2005; Venkatesh et al., 2003) conforming our context of the research. On the positive valence, four items of functional value are adopted from (Hou et al., 2020; Venkatesh & Bala, 2008) as it is closely related to the perceived of the usefulness of a particular technology. And the economic value and social value of the positive valence, the three items of both are adopted and adapted from (Dann et al., 2020; Zhu et al., 2017). On the other hand, all three measurement items of both privacy risk and learning cost of the negative valence are adapted from (Park et al., 2019; Zhu et al., 2017). All the measurement items are based on the research model as in Fig. 1. All the measurement items are as shown in Table 2.

4. Data analysis and result

4.1. Measurement model evaluation

Measurement model evaluation (outer model) is the first step of evaluation in the data analysis cycle before proceeding to the structural model evaluation (inner model). The measurement model evaluation is related to the extent to which the observed indicators reflect the underlying latent constructs. This essentially is aimed to ensure that the measurement items employed representing the latent constructs are reliable and valid (Gallagher & Brown, 2013) (i.e. The errors that occurred from the data analysis can still be tolerated). In Table 2, all constructs and their measurement items are presented. The measurement model evaluation is conducted by examining the reliability and validity of each construct. As this is a reflective measurement model the Confirmatory Factor Analysis (CFA) is employed. CFA is used once the hypotheses have been explicitly stated (Gallagher & Brown, 2013; Gillaspy, 1996). The evaluation is begun by examining the Loading Factor (LF). As in Table 1, LF is generally accepted if the value is greater than

Table 2
Values of Loading Factors, Cronbach Alpha, Composite Reliability and Average Variance Extracted of the constructs and the measurement items.

Constructs	Measurement items	References	Indicators	LF	CA	CR	AVE
Technology Anxiety (TA)	I have difficulties to understand technology	(Meuter et al., 2013)	TA1	0,848	0,875	0,914	0,728
	When there is an opportunity to use technology, I am afraid I will ruin it		TA2	0,831			
	Anything related to the technology makes me confuse		TA3	0,882			
	I stay away from the technology as I am not familiar to use it		TA4	0,851			
Social Influence (SI)	Those who I trust recommend me to use GO-JEK services, GoRide and/or GoCar	(Nysveen et al., 2005; Venkatesh et al., 2003)	SI1	0,834	0,806	0,886	0,722
	Those who influence my behaviour think I have to use GO-JEK services, GoRide and/or GoCar		SI2	0,915			
	I use GO-JEK services, GoRide and/or GoCar, as those who around me also utilise it		SI3	0,796			
Functional Value (FV)	Employing GO-JEK, GoRide and/or GoCar, will save my time in commuting from one place to another	(Hou et al., 2020; Venkatesh & Bala, 2008)	FV1	0,848	0,893	0,925	0,756
	The presence of GO-JEK service (GoRide and/or GoCar) has help my life in general		FV2	0,877			
	Using GO-JEK service (GoRide and/or GoCar) is more practical than other transportations		FV3	0,880			
	Using GO-JEK service (GoRide and/or GoCar) is relatively easier than other transportation		FV4	0,872			
Economic Value (EV)	Using GO-JEK service (GoRide and/or GoCar) for transportation save my money	(Dann et al., 2020)	EV1	0,905	0,828	0,888	0,668
	Using GO-JEK service (GoRide and/or GoCar) for transportation make it easier for me to save money		EV2	0,880			
	Using GO-JEK service (GoRide and/or GoCar) is relatively cheaper than other transportations		EV3	0,896			
Social Value (SV)	Using GO-JEK service (GoRide and/or GoCar) give a positive impression of me to others	(Dann et al., 2020; Zhu et al., 2017)	SV1	0,915	0,897	0,936	0,829
	Using GO-JEK service (GoRide and/or GoCar) makes me feel more accepted by the environment		SV2	0,927			
	Using GO-JEK service (GoRide and/or GoCar) makes me looked present by others		SV3	0,890			
Privacy Risk (PR)	I feel unsecure to give my credential to GO-JEK application	(Park et al., 2019; Zhu et al., 2017)	PR1	0,838	0,844	0,906	0,762
	I feel my privacy will be breached if using GO-JEK application		PR2	0,890			
	I feel there will be a data security risk if using GO-JEK application		PR3	0,889			
Learning Cost (LC)	I need a long time to learn as to how GO-JEK service (GoRide and/or GoCar) works	(Zhu et al., 2017)	LC1	0,947	0,925	0,953	0,870
	I need a great effort to master to use of GO-JEK service (GoRide and/or GoCar)		LC2	0,943			
	I need a help of others to learn how to use GO-JEK service (GoRide and/or GoCar)		LC3	0,908			
Attitude (ATT)	I like GO-JEK service (GoRide and/or GoCar)	(Venkatesh et al., 2003)	ATT1	0,864	0,922	0,945	0,810
	I feel GO-JEK service (GoRide and/or GoCar) is useful		ATT2	0,921			
	I feel GO-JEK service (GoRide and/or GoCar) is interesting		ATT3	0,925			
	I feel using GO-JEK service (GoRide and/or GoCar) is fun		ATT4	0,889			
Intention to Use GO-JEK app (INT)	I feel a need to use GO-JEK service (GoRide and/or GoCar) in daily activities	(Park et al., 2019)	INT1	0,864	0,887	0,930	0,816
	I am planning to adopt GO-JEK service (GoRide and/or GoCar) in near future		INT2	0,931			
	I am planning to adopt GO-JEK service (GoRide and/or GoCar) in the future		INT3	0,914			

0.7 (Hair et al., 2017). The LF above 0.7 indicates that the construct explains more than 50% indicator's variance demonstrating that the indicator exhibits a satisfactory degree of reliability (Sarstedt et al., 2017). However, it is worth noting that the measurement item "*I use GO-JEK ride hailing services as there are various discount offered*" with the indicator EV4 is removed from further analysis as the loading factor value is 0.641, lower than the allowed threshold.

The first criterion in the measurement model evaluation is by measuring the internal consistency reliability. Both Cronbach's Alpha (CA) and Composite Reliability (CR) values are used for this measurement. This is because in the reflective measurement model with PLS-SEM, Cronbach's alpha is generally the lower bound while composite reliability is the upper bound. As in Table 2, the internal consistency values are equal or higher than the threshold of 0.7 (Hair et al., 2017), which is considered satisfactory. The following criterion in the measurement model evaluation is evaluating the validity of the construct. This is assessed with convergent validity evaluation to the extent to which a construct converges in its indicators by explaining the item's variance (Sarstedt et al., 2017). In other words, this particular evaluation demonstrates to what extent a variable/indicator is correlated to other indicators under the same construct. This particular validation is assessed by the Average Variance Extracted (AVE) across all measurement items of a particular construct. The acceptable threshold for AVE is 0.5 or higher (Astrachan et al., 2014).

As drawn in Table 2, the AVE values of all constructs are higher than the threshold. In the measurement model evaluation, once the reliability has been successfully established and supports the measured reflective constructs, the next step is to perform discriminant validity evaluation. The aim is to assess to what extent a construct is empirically distinct from other constructs. Particularly, this is aimed to show to what extent a construct correlates with other constructs and how distinctly the indicators represent only this single construct (Astrachan et al., 2014). In other words, the discriminant validity is aimed to measure that each of the constructs is unique, and therefore, each of them is used to represent a phenomenon that other constructs do not. Table 3 presents the discriminant validity evaluation. At the construct level, discriminant validity is evaluated by comparing the square root of the AVE value of a construct with its construct's correlations and other constructs. This is based on the Fornell-Larcker criterion (Hair et al., 2017). In Table 3, the square root of AVE for each construct is greater than that of particular construct' correlations and other constructs. This result indicates that discriminant validity is well established. As the measurement model evaluation supports the measurement quality, the structural model evaluation can proceed.

4.2. Structural model evaluation

Once we have confirmed that the construct measurements are valid and reliable, the next step addresses the structural model evaluation. As earlier described, the structural model evaluation specifies the relationships between the independent and dependent variables (Wong, 2013). The structural model evaluation was carried out using the two-tailed test with a significance level of 5% (this means that the t-value must be higher than 1,96 or p-value should be lower than 0.05) for the hypotheses to be accepted (Hair et al., 2011). The result of the structural model evaluation is drawn in Table 4. Out of 16 (sixteen) developed hypotheses, 5 (five) of them are rejected and 11 (eleven) are accepted. The hypotheses of H2, H3, H9, *H*10, and H14 are rejected as their significant levels are lower than the specified threshold. The rejected hypothesis H14 also implies that both technology anxiety (H4) and social influence (H9) on the privacy risk will be abandoned as they have no significant impact statistically on the attitude towards intention to use GO-JEK.

The model of the evaluated hypotheses is finally presented in Fig. 2. The results in Fig. 2 also show the coefficient of determination (R^2), that is a coefficient that indicates the variance in a dependent (endogenous) construct described by all of the independent (exogenous) constructs

Table 4
Structural model evaluation.

Code	Structural path	T-statistic	Lower	Upper	P-value	Remarks
H1	Technology Anxiety → Functional Value	3.249	−0.457	−0.103	0.001	Accepted
H2	Technology Anxiety → Economic Value	1.586	−0.239	0.030	0.110	Rejected
H3	Technology Anxiety → Social Value	0.783	−0.049	0.135	0.429	Rejected
H4	Technology Anxiety → Privacy Risk	4.041	0.140	0.424	0.000	Accepted
H5	Technology Anxiety → Learning Cost	8.761	0.469	0.753	0.000	Accepted
H6	Social Influence → Functional Value	7.044	0.263	0.471	0.000	Accepted
H7	Social Influence → Economic Value	6.113	0.235	0.470	0.000	Accepted
H8	Social Influence → Social Value	8.110	0.357	0.586	0.000	Accepted
H9	Social Influence → Privacy Risk	1.648	−0.230	0.026	0.102	Rejected
*H*10	Social Influence → Learning Cost	1.383	−0.029	0.168	0.175	Rejected
*H*11	Functional Value → Attitude	10.318	0.434	0.642	0.000	Accepted
H12	Economic Value → Attitude	2.840	0.047	0.243	0.004	Accepted
H13	Social Value → Attitude	2.592	0.033	0.215	0.007	Accepted
H14	Privacy Risk → Attitude	1.219	−0.145	0.032	0.218	Rejected
H15	Learning Cost → Attitude	2.783	−0.258	−0.041	0.007	Accepted
H16	Attitude → Intention to Use	13.913	0.566	0.765	0.000	Accepted

Table 3
Discriminant validity.

Construct	TA	SI	FV	EV	SV	PR	LC	ATT	INT
TA	0,863								
SI	0,024	0,850							
FV	−0,288	0,366	0,870						
EV	−0,101	0,357	0,456	0,894					
SV	0,049	0,479	0,228	0,450	0,911				
PR	0,284	−0,099	−0,306	−0,209	−0,084	0,873			
LC	0,634	0,083	−0,358	−0,094	0,109	0,288	0,933		
ATT	−0,347	0,303	0,710	0,475	0,301	−0,306	−0,361	0,900	
INT	−0,268	0,306	0,585	0,407	0,308	−0,235	−0,258	0,677	0,904

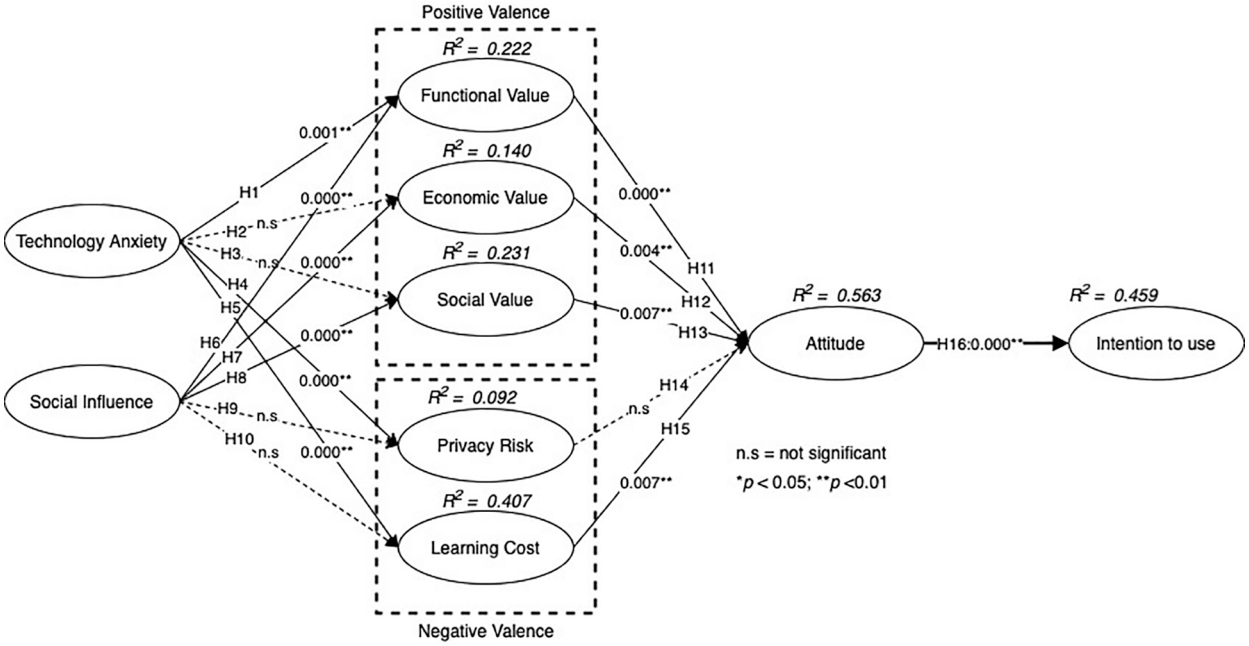

Fig. 2. Evaluated proposed model.

linked to it (Hair et al., 2017).

The coefficient of determination of the constructs of attitude, intention to use and learning cost categorised has a substantial value. This demonstrates that these constructs can be well explained by their exogenous constructs (e.g., attitude towards using GO-JEK can be well explained by functional value, economic value, social value, etc.). More precisely, R^2 (attitude) is 0.563 indicating that at least 56.3% variances of the attitude construct are described by its three exogenous constructs as the findings. Correspondingly, R^2 of intention to use (0.459) and earning cost (0.407) indicate that 45.9% and 40.7% variances of the construct intention to use and learning cost can be well explained by their exogenous variables, respectively. On the other hand, other endogenous constructs: functional value, economic value, social value, and privacy risk are categorised as weak prediction values of their construct relationships (Hair et al., 2011) as their coefficients of determination in a row are 0.222, 0.140, 0.231 and 0.092 respectively.

5. Discussion and conclusion

As in Table 4, the relationships between technology anxiety and social influence towards positive valence are significant statistically on the functional value as their p-values are less than the threshold of 0.05 (or t-statistic > 1.96) (p-values H1 = 0.001 and H6 = 0.000, respectively). This means that perceived functionalities to the GO-JEK ride-hailing services might lessen the anxious feelings of individuals to adopt them. The relationships also inform the perceptions of individuals' social relations of the services related to functionalities they need, such as more practical, easy to use and improved efficiency in commuting. These views drive individuals to have the same positive feeling as their social peers to the service, which drives them to accept it. The other relationships to both economic and social values, only social influence has a significant relationship statistically to them as their p-values are far<0.05 (p-value = 0.000 for both H7 and H8, or their t-statistics are 6.113 and 8.110 respectively, far higher than 1.93). On the other hand, the technology anxiety has no significant relationship statistically to them (H2 and H3) as their p-values (0.110 and 0.429 respectively) are higher than the threshold of 0.05. These results indicate that GO-JEK ride-hailing services have been popular and widely accepted by the individuals' environment in which they encourage the individuals to adopt them as well.

On the relationships to the negative valence, only technology anxiety has significant relationships to both privacy risk and learning cost statistically (H4 and H5) with the p-value for both of them are 0.000, far less than the threshold of 0.05. on the other hand, social influence has no significant relationship statistically to both values (H9 and H10) as their p-values are 0.102 and 0.172, respectively (<0.05).

On the relationships to the attitude, all factors from both positive and negative valences (H11-H13 and H15), but privacy risk (H14), have a significant relationship statistically. The attitude also significantly relates to the intention to use GO-JEK ride-hailing services.

In Fig. 2, the coefficients of determinations (R^2) of all dependent variables are presented. On the relationships between the technology anxiety and social influence on both positive and negative valences, R^2 of learning cost is the highest (0.407). This means that 40.7% of learning costs can be explained moderately by technology anxiety alone. This is not surprising that technology anxiety is highly related to individuals' uneasy feelings to avoid using the new technology (Tsai et al., 2020). This perceived bias may be mediated by inaccurate ideas about individuals' abilities to utilise technology, which lead them to believe that it is hard to be familiar with the new one (Heinssen et al., 1987). Therefore, although both technology anxiety and social influence have a significant relationship to functional value, they both can only explain 22.2% (R^2) of the functional variance value, which is smaller than R2 of learning cost.

On the relationships to positive valence, R^2 of social value is 0.231, which means that 23,1% of social value is explained solely by social influence. This value is higher compared to the R^2 of the functional value. This is because social value and social influence are related mainly. Both are about the impression to and from others to individuals in relation to using the GO-JEK ride-hailing. While social influence is about the influence from others on the individuals that affect their intention to use the services, on the contrary, social value is about how individuals assert their presence to be accepted in their social environment by embracing the services. This also explains that the R^2 of economic and even functional values are lower than that of social value.

Of all the coefficients of determinations on both positive and negative valences, there is a tendency that technology anxiety has less determination towards the intention to use ride-hailing services. This is

as depicted from earlier explained. One possible explanation is that due to the advancement and ubiquitous of mobile technology, such as mobile banking, mobile payment and various mobile-based applications most individuals use these days, the experience with these applications shapes the lesson learnt. These also help them to alleviate the anxiety feeling of the GO-JEK ride-hailing application.

The result also shows that while R^2 of attitude is 0.563, R^2 of intention to use is lower (0.459). This informs the adoption rate of the GO-JEK ride-hailing service. That is, although individuals with smartphones are aware of GO-JEK ride-sharing services with all the benefits (and also from the social influence) they offer ($R^2 = 0.563$), they do not correlate with improving the individuals' intentions to use it ($0.459 < 0.563$). Based on valence theory, individuals attempt to maximise the impact of positive values of a product or service and minimise its negative aspects. Thus, the results of evaluated hypotheses show that both positive and negative valences contribute to shaping the technology anxiety and social influence of individuals to their positive attitude on ride-hailing services. However, the R^2 of intention to use (0.563) posits that it does not automatically increase their intention to accept it. In other words, most people in Indonesia have acknowledged GO-JEK ride-hailing services. However, recognising it does not automatically lead them to adopt it as their primary commuting tool.

Thus, these results essentially emphasise the issue presented in this research that needs to be addressed. The results also depict that the valence values can effectively shape the positive attitude of ride-hailing services. These have been shown with the technology anxiety and social influence factor that can be positively shaped to the attitude of ride-hailing services. However, the results also inform that the other factors might contribute primarily to their intention to use ride-hailing services. Therefore, these results will also be the flagship of our future research agenda to better comprehend the ride-hailing service in Indonesia. In particular, with all the benefit and trickle-down economic effects that might be inflicted by embracing these services, understanding the factors that inhibit this acceptance is worth seeking.

5.1. Theoretical implications

This research contributes to the theoretical framework of the existing mobile ride-hailing literature by which valence theory is used to influence the decision-making process of the individual in the intention to use the service. Although valence theory has been widely utilised in various studies previously, it is hardly used in the context of the adoption of mobile ride-hailing services. In particular, how it is used to portray the cost-benefits analysis by equipping the positive and negative valence to the antecedents towards the decision to adopt a ride-hailing service. In other words, regardless of the antecedents of the factors that contribute to the ride-hailing service, valence factors seek to provide a mechanism objectively for individuals in their nature to opt for adopting ride-hailing services.

Towards the contributions to the attitude to use GO-JEK service, technology anxiety and social influence will be affected positively by the functional value that mediates them. In other words, for those who intend to use the service, regardless of the influence obtained from social relations and the technology anxiety, the functional value perceived by individuals might turn these feelings to be a positive attitude to adopt it. This result is consistent with the previous ones (Zhu et al., 2017; Gelbrich & Sattler, 2014) that the apprehensiveness feeling visualised by individuals towards using the ride-hailing application contributes to the resistance of adopting this technology. However, with the functionalities mediating this feeling, the attitude to use the service will be reconciled. For other positive values (economic values and social values), only the social influence that affects them substantially (Hypotheses H7 and H8. The p-value of both relations $<= 1\%$), while technology anxiety has no significant influence statistically on them. These relations imply that any influence individuals obtained from their social environment will be arbitrated by the positive perceptions of the economic and social values to the attitude of adopting the GO-JEK ride-hailing services. This is in line with the previous works by (Park et al., 2019; Zhu et al., 2017) that economic and social values significantly influence the intention of adopting the ride-hailing service.

For the negative valence factors, privacy risk and learning cost, only technology anxiety influences them substantially (Hypotheses H4 and H5). However, since the findings show that the privacy risk has no significant effect on the attitude towards adopting GO-JEK, then the relation to it does not provide any contribution to the discourse of the adoption rate of GO-JEK. This implies that the majority of the respondents put less concern on the privacy issues of the application but learning cost instead. If there is a change in the technology anxiety, it also affects directly and significantly the learning cost as the significant path coefficient of the relationship. This result tends to be similar to the previous studies in the context of the effect of privacy concerns on technology adoption (Nguyen-Phuoc et al., 2021; Ozturk et al., 2017). Put it differently, in the context of the decisions to adopt a mobile-based technology, it seems that privacy risk is no longer the determinant. This is, for instance, as demonstrated by Ozturk et al. (2017) in the context of mobile payment adoption. Although our study and Ozturk et al. (2017) are in a different context (mobile-based payment and mobile-based ride-hailing), they both investigated the intention to adopt mobile-based applications. One possible explanation of the same result of both studies is ubiquitous mobile-based services these days: mobile-based payment, mobile-based ticketing, mobile-based hotel booking, and so forth. These mobile-based experiences provide the best lesson learnt that individuals need to provide their credentials to be able to utilise them. Therefore, compromising individuals' privacies need to be seen as prevalent to have such privileges to access all the mobile-based services individuals most require from anywhere and anytime. Therefore, it is also no surprise that privacy risk has no significant effect on the attitude towards using ride-hailing services (H4).

In addition, it is found that the functional value has a stronger relationship to the attitude towards the intention to use the technology. This aligns with previous research that the functional value has a stronger effect both directly and indirectly towards the users' attitude (Han et al., 2017). The relationship between the attitude and the intention to use GO-JEK mobile ride-hailing in this research is consistent with other theories widely adopted in the Information System research (Wang et al., 2018; Zhu et al., 2017; Septiani et al., 2017) of mobile ride-hailing.

5.2. Practical implications

Practically, this research extends our understanding practically for GO-JEK provider at improving the adoption of its rate of service. Particularly, how the positive and negative valences can be used to foster and/or reduce the effect of technology anxiety and social influence respectively. In other words, regardless of the technology anxiety and social influence towards their influence on the intention to use GO-JEK service, the valence factors can shape both the antecedents to be the positive and/or the negative attitudes in improving the adoption rate of the application. The valence theory is embraced as a decision-making tool to mediate behaviours by individuals in their intention to adopt the ride-hailing service (Ghasemaghaei, 2020; Wang et al., 2019; Hajli, 2019; Heinonen, 2018). While the positive valence encourages the individuals to use it, the negative one hinders it to be accepted by them. Therefore, understanding these relationships thoroughly between the antecedents and the valence factors, both positive and negative, provides the GO-JEK provider the knowledge required to improve its adoption rate.

The evaluation demonstrates that the positive valence (functional, economic and social values) significantly affects that attitude towards the intention to use the GO-JEK ride-hailing service. However, for both the antecedents, while the three positive values mediate the social influence, only the functional value mediates the technology anxiety. For

the provider, this informs that regardless of the social influence perceived by an individual from their interactions, the functional, economic and social values arbitrate it positively towards the attitude of using the GO-JEK. This also means for the GO-JEK provider, improving the functionalities, economic and social values might help the brand popularity by which customers will feel self-esteem whenever they aim to adopt GO-JEK service. This in turn contributes directly to the adoption rate of the service. In addition, improving these values of the service minimises the apprehensive feeling perceived by individuals towards the attitude using the GO-JEK. Towards improving the functionalities, the GO-JEK management, for instance, can provide 24/7 assistants that might assist the new adopters to master the application. This can also be conducted by providing various payment gateways, not only the one that developed and owned by the GO-JEK: GoPay, but also the others, for instance, OVO, Dana, LinkAja (Putri et al., 2019). This provides users with the various electronic payment they already mastered and preferred the most. For the GO-JEK management, enhancing the features of the functionalities of the service might attract its adoption.

6. Limitation and future research direction

This research presents significant theoretical and practical implications to understand the adoption of mobile ride-hailing services. However, the result also reveals several limitations that should be acknowledged to address as the future research direction. First, the majority of the respondents in this research are those who are young ages (17–25 years old), making up nearly 63% of big cities in Indonesia. Specifically, the respondents of this research who are<36 years old made up 72.5%. This implies that the result cannot be generalised as in fact, the ride-hailing service has been the transportation mode of all ages. Second, as the focus of the research is aimed to discern as to how the valence factors shape the social influence and technology anxiety regardless of the city in Indonesia the respondents are, the results might be different for those who are living in other cities than in Jakarta Metropolitan Area (Jakarta, Bogor Depok, Tanggerang and Bekasi). This is because the population density that represents the necessity of the hide-hailing service might be different between them. Therefore, evaluating with wider and more diverse respondents will be the flagship of our future research directions. Third, the sample size (251 respondents) is very small compared to the targeted population. Thus, to more generalise this research for future research, larger respondents from more diverse backgrounds are sought.

It is noteworthy that GO-JEK has been transformed as a brand of a super-apps featuring not only ride-hailing services but also various ones such as e-wallet (Go-Pay), delivery service (Go-Send), shopping service (Go-Mart). However, our objective in this research is to investigate only ride-hailing services: two-wheeled (GoRide) and four-wheeled (GoCar) services. This is embodied in our measurement instrument items as shown in Table 2, specified only for GoRide and GoCar. However, the study paves the way to expand our research to examine other services in the feature.

CRediT authorship contribution statement

Dedi I. Inan: Conceptualization, Methodology, Formal analysis, Writing – original draft, Visualization, Writing – review & editing. **Achmad Nizar Hidayanto:** Conceptualization, Methodology, Formal analysis, Visualization, Writing – original draft, Supervision. **Ratna Juita:** Conceptualization, Methodology, Formal analysis, Project administration, Writing – original draft. **Kemala Andiyani:** Conceptualization, Formal analysis, Investigation, Writing – original draft, Validation. **Nabilla Hariyana:** Conceptualization, Investigation, Writing – original draft, Validation. **Priscilla Tiffany:** Conceptualization, Formal analysis, Investigation, Writing – original draft, Validation. **Teresa Prima Tangis Pertiwi:** Investigation, Writing – original draft, Project administration, Validation. **Sherah Kurnia:** Conceptualization, Methodology, Supervision, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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