

Article

# Purchase Intention in the Online Open Market: Do Concerns for E-Commerce Really Matter?

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**Abstract:** This study aims to investigate motivational factors and motivation hindering factors of online shopping via online open market platforms. For a comprehensive exploration, the response data were collected from a total of 417 Korean consumers before conducting a hierarchical regression analysis. The results showed that the effects of motivation factors on purchasing intention were all supported. As for moderating effects of concerns for e-commerce, privacy concerns by time saving, perceived ease of use, and security concerns by cost saving were found to be statistically significant. Privacy concerns by cost saving and business integrity concerns by time saving were also found to be statistically significant, but had a positive effect as opposed to an initial prediction. The finding denotes that, in order to reduce concerns for e-commerce, consumers may prefer using the online shops they can trust based on their previous shopping experience. Various concerns identified and analyzed in this study are clues to better understanding what potentially motivates or obstructs consumers to shop online, thereby helping businesses thrive in the online open market.

**Keywords:** online open market; transaction intention; privacy concern; security concern; business integrity concern

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## 1. Introduction

The online market has provided unique opportunities for e-commerce businesses. But it is also true that competition among online markets is getting stiffer as increasing number of businesses open online stores or shopping apps with the growth of e-commerce users. In this highly competitive situation, attracting and retaining more customers have become a major concern for online business firms [1,2].

Total online sales in Korea reached KRW 9.6 billion (1 USD = KRW 1170 as of 6 January 2020), up 16.4% year over year as of February 2019 [3]. As for the growth rate by types of e-commerce, the business-to-consumer (B2C) market grew about 94 times, while the consumer-to-consumer (C2C) market expanded more than 320 times during the period from 2001 to 2013, a more notable growth in C2C transactions in Korea [4].

Among numerous online markets, open markets have attracted more consumers, leading the growth of e-commerce market in Korea [5]. An open market, modeled after online auctions, is an online store mediating business between sellers and consumers. In other words, the open market owner or the platform operator is a middleman that enables transactions between sellers and buyers, which benefits sellers because they can focus on developing and providing quality products. An open market has a commission-based structure, not counting on merchandising capabilities, because the revenue comes from commission paid by third-party vendors. The online auction or reverse auction model, pioneered by the first generations of e-marketplaces, including eBay, Auction, and Priceline, enormously expanded its reach into the e-commerce industry. Amazon, first founded as an Internet-based book seller, now sells more items through its third-party marketplace than through its

own retail operations. In Korea, major players include Auction, Gmarket (Seoul, Korea), Interpark (Seoul, Korea), and SK Planet's (Seoul, Korea) 11th Street.

E-commerce users face a number of concerns in using e-commerce platforms, including security and reliability issues [6,7]. Users want to make sure whether the website they are using is a secure online destination [8]. They also try to develop their views about the legitimacy of the online business, which eventually affecting users' intention to make transactions on the Internet [9]. What is problematic is a lack of trustworthy standards that help e-commerce users to assess legitimacy and credibility of vendors, which consequently makes users keep worrying about e-commerce security [10]. Consumers tend to make a final purchase decision after considering various factors including brand reputation or awareness, product quality, security, user-friendliness, price competitiveness, product diversity, and others. Among various issues related to e-commerce security, the effect of consumer concerns and perceived risk associated with the likelihood of purchase has been considered one of the most vital subjects of research [11]. E-commerce security refers to keeping e-commerce sites secure by ensuring the safety of personal information, security systems, and payment methods. Since consumers' purchase decisions are greatly affected by the safety of electronic transactions [12], more attention needs to be paid in the interactions between e-commerce security and other various factors affecting purchase through open market websites.

Despite the recent exponential growth of online platforms, there has been less empirical evidence for what motivates to purchase over an online open market [5,13,14]. There are tons of research studying consumers' behavior related to online shopping, but most of them focused on a single aspect of purchase intention when purchasing online shopping malls. Moreover, little research has been done so far to investigate both motivational and hindering factors impacting purchase in the online open market.

From a practical perspective, this research may provide online open market operators with essential information and guidelines by accurately identifying various types of perceived risk and the factors that keep potential buyers from visiting an open market website. Based on such guidelines, the operators may be able to take appropriate measures aiming at reducing consumers' risk levels [15], which will consequently improve actual sales and consumers' responses, including purchase intention [16]. In particular, this study seeks to investigate the perceived barriers influencing the intention of both users and non-users to purchase via an online open market. Understanding these potential obstacles helps open market service providers develop more efficient strategies in terms of marketing and website operation, which will drive more traffic to the websites. Therefore, the ultimate goal of this study is to identify antecedents, both motivating and hindering factors affecting purchase intention in the e-marketplaces, which is a different approach from previous studies. With this goal in mind, purchase intention in the e-marketplace is observed as an outcome variable and online open market are the main subject of this research.

## 2. Theoretical Background and Literature Review

### 2.1. Purchase Intention through an Online Open Market

Purchase intention is a consumer's tendency to perform a particular action and serves as a critical barometer to predict consumer behavior [17]. Consumers generally develop their expectations based on product information before they decide to purchase a product. Accordingly, the intention consumers have prior to purchase is influenced by their attitudes at the pre-purchase step [18]. In other words, purchase intention refers to a consumer's expression of willingness to take a particular action in relation to buying a certain product or service, and it is influenced by the consumer's trust and attitudes toward a product or service. Also, purchase decision is more greatly influenced by consumers' purchase intention than their attitudes toward a product or service itself [19]. In this study, a consumer's intention to purchase from an online open market is considered a dependent variable to examine what motivates or discourages online purchase intention. This section first overviews

favorable motivating factors, and Section 2.2 addresses motivation hindering factors by describing concerns for e-commerce based on literatures pertaining to perceived risk.

Purchase intention pursued by this study connotes “transaction intention” because it is not developed by a certain product or service but by transaction platforms—an online open market. Building upon the definition of purchase intention mentioned above, “intention to purchase from an online open market” is described as one’s willingness to perform a specific behavior to buy a product or service from an online open market, and the intention is influenced by the consumer’s trust in online transactions placed in a particular open market and attitudes toward that open market website. Consumer trust is considered important because it serves as a motivation factor of purchase intention. Among numerous theories regarding motivation factors that lead to developing behavioral intention, this study finds its theoretical foundations from the following three models that have been widely adopted in the field of MIS (Management Information System): the technology acceptance model, social cognitive theory, social exchange theory. By doing so, this study seeks to identify motivation factors that determine purchase intention in the online open market.

### 2.1.1. Technology Acceptance Model

The theory of reasoned action (TRA) and the theory of planned behavior (TPB) have been widely used by researchers as a theoretical base to explain and predict user acceptance and use of IT, and based on these theories, several competing models have been suggested [20–22]. The technology acceptance model (TAM), first suggested by Davis [23], provides a foundation for examining the impact of external factors on internal beliefs, attitudes, and intention associated with employing and accepting technologies. As an expansion of TRA, TAM has been widely used to investigate information technology usage behaviors. TRA posited that a person’s behavior is guided by one’s behavioral intention [24]. Likewise, it can be assumed that the intention to use information systems may lead to actual usage behavior.

TAM presents two important constructs—perceived usefulness and perceived ease of use—and both of them influence behavioral intention. Perceived usefulness is defined as “the extent to which people believe that the ability to perform a given task is improved by using a particular technology or system.” This can be interpreted that the intention to use technologies further increases if people expect that their job performance will be enhanced by the use of technologies. Perceived ease of use is “the extent to which people believe that using a particular system is effortless.” When a technology is perceived to be easier to use, technology usage intention is positively influenced, and more benefits are expected from the use of this technology. This eventually influences perceived usefulness [23]. Better understanding of these casualties helps in the design of effective intervention measures that make more people use new information systems [25]. TAM excludes an attitude variable from the model based on its logic that perceived usefulness has a direct impact on information technology acceptance intention without going through acceptance attitudes. TAM has been the cornerstone of numerous prior studies that aim to predict user intention and behavior associated with the use of information systems [25,26]. Drawn from beliefs-related variables in TAM, this study focuses on perceived usefulness and perceived ease of use, and ultimately aims to understand motivation factors of purchase intention in the online open market in light of technology acceptance mechanism.

### 2.1.2. Social Cognitive Theory

Social cognitive theory (SCT) has been generally used to understand individuals’ motivations, thoughts, and behaviors in various situations [27]. This theory argues that environmental, cognitive, and personal factors influence each other [27], and individuals not only react to the environment but also behave in a way to make a positive change in the environment.

Among a few constructs mentioned in SCT, this study sheds more light on the role of a cognitive component—outcome expectations. Outcome expectations are defined as one’s assurance that engaging in a behavior will produce certain outcomes [28], which is considered one of the most primary factors

to predict future behaviors. Since individuals tend to engage in a behavior whose outcome is expected to be positive, outcome expectations may discourage performing a certain behavior with negative expected consequences. Outcome expectations are consistent with perceived usefulness proposed by Davis [29] in the TAM model [30] and serve as a critical factor for explaining one's engagement in a certain behavior in a plethora of research on information systems [30,31]. From the perspective of SCT, consumers do not simply respond to a given settings of purchase, but develop the intention to buy from online open market (purchase intention) based on expected benefits they may have from purchase (perceived usefulness) and self-efficacy (perceived ease of use).

### 2.1.3. Social Exchange Theory

Social exchange theory (SET) was proposed by Homans [32] and claimed that a person's various social behavior is the process of exchange. Rooted in economics, SET asserted that one's behavior is results-driven by calculating and evaluation tangible or intangible cost and benefits resulting from a given behavior [33]. If the rewards one can receive from an interaction exceeds the costs of interaction, the interaction is more likely to continue [34]. Conversely, the interaction is unlikely to occur when the costs of interaction are greater than the rewards of interaction. Therefore, SET can provide theoretical evidence to explain cognitive processes associated with purchase decisions when consumers try to buy something from open market websites. These consumers may be able to understand the offset between benefits and costs resulting from the use of online open market. For instance, making an online purchase in an open market enables consumers to save time and money while they may face risks for e-commerce transactions.

To conclude, TAM, SCT, and SET are appropriate for providing a foundation for understanding consumers' cognitive processes when deciding to purchase from an online open market. This study viewed the costs and benefits explained in SET as outcome expectations consumers have by making a purchase via online open market and defined the key terms describing factors that influence purchase intention in the online open market. Two terms—economic advantages (i.e., cost saving and time saving) and convenience (i.e., perceived ease of use)—were defined to explain motivation factors, and one term—perceived risk—was created to examine motivation hindering factors.

## 2.2. Perceived Risk and Concerns for E-Commerce

Perceived risk is the uncertainty people experience when buying a product or service and is defined as the expectations of losses associated with a certain purchase [35]. Liebermann and Paroush [36] verified that willingness to accept newly launched products is mainly determined by how to alleviate perceived risk that might be caused by new products. The impact of perceived risk is applied to potential customers who are not currently using a product but positively consider becoming users based on a strong interest in the product. Existing users who are willing to continue to use a product are also influenced by perceived risk [37]. The same goes for online purchase behaviors. There has been previous research suggesting that perceived risk is one of the major considerations in the process of consumers' decision-making on the Internet. For example, Donthu and Garcia [38] revealed that non-online shoppers are more risk-averse than online shoppers, which indicating that non-online shoppers perceive a higher degree of subjective risk associated with online shopping.

Consumers tend to feel greater risk in their online shopping because the e-commerce environment has unique characteristics, such as the lack of information available and lack of face-to-face interaction [39,40]. Furthermore, online payments and sharing personal information greatly increase the perceived risk associated with online shopping [41]. An extensive body of research has already found that higher levels of perceived risk may negatively influence consumers' intention to buy items online and their behaviors on the website (e.g., [39,41–51]). Based on these prior studies, consumer hesitation in making online transactions is partly driven by relatively high levels of concerns about online shopping [52].

According to a recent preliminary literature review, perceived risk is divided into various components [37,53]. Among them, online privacy and security are assumed as the major concerns arising from online shopping. Both online users and non-online users develop perceived risk involved with other components. For example, concerns related to security, privacy, and business integrity are the main barriers making consumers hesitate to purchase on the Internet [9,54,55].

In this study, consumers' concerns over e-commerce are examined based on three dimensions—security, privacy, and business integrity. The higher the concerns for e-commerce, the weaker the online purchase intention generated. This is because higher levels of perceived risk may drive up the expectations of losses associated with purchase decision, which consequently leads to hesitation and aversion to online purchase in open markets. This study seeks to examine three dimensions of concerns for e-commerce from platform-related and seller-related viewpoints. There are four agents who make online open markets work: sellers, buyers, third-party vendors, and the platform itself. Concerns over privacy and security belong to the domain of the platform because they are greatly influenced by the physical environment of the open market website, business policies, and guidelines. The role of sellers in the open market is less relevant with running and maintaining a platform. They are just one of the marketplace participants trading through the website, which is different from general e-commerce websites where sellers own and operate the website. Unlike privacy and security issues, business integrity concerns are deeply related to sellers, not coming from a platform. Therefore, the role of business integrity concerns may be distinct from that of privacy and security concerns.

### 3. Hypotheses Development

#### 3.1. Motivation Factors and Purchase Intention in the Online Open Market

According to motivation researchers, motivation to perform a behavior is broadly divided into two categories—extrinsic and intrinsic motivation [56]. Extrinsic motivation plays an instrumental role in encouraging people to behave in order to achieve external rewards or values outcomes. Better job performance, benefits, pay rise or promotions are the sources of extrinsic motivation (e.g., [57–59]). While one is extrinsically motivated due to reinforcements of valued outcomes, intrinsic motivation is defined as doing activities without apparent reinforcements or rewards, but caused by internal interests or enjoyment [60,61]. Built upon outcome expectations suggested by SCT, this study focuses more on extrinsic motivation and considers perceived usefulness as an example of extrinsic motivation [56].

In the context of this study, perceived usefulness refers to perceived beliefs that purchasing from an open market saves costs and time. Based on TAM [30], perceived usefulness has a positive effect on purchase intention in the online open market. The concept of perceived usefulness overlaps with perceived values. The concept of perceived values, a comprehensive term, is divided into functional values and emotional values [62,63]. Functional values are defined by individuals' rational and economic assessment, while emotional values include sentimental or social dimensions. An open market is a platform where numerous sellers and buyers transact through an online open market, and identical products are traded through other open market websites or offline stores by the same or different sellers. Therefore, the better way of approaching perceived values is focusing on a platform itself, not a single product traded on the website.

In addition, this study converted dimensions of perceived values into economic and time values with a view to identifying extrinsic motivation factors. Consumers perceive economic values when they purchase a product or service at a lower price than alternatives are purchased [64]. The alternatives in this study are defined as purchasing from offline stores or other online open markets. According to the previous research about economic and time values that consumers appreciate, purchase intention is positively perceived when consumers perceive more benefits than sacrifices [65], and it can be therefore concluded that economic and time values have a positive effect on consumers' choice of purchase channel [66].

Likewise, it was hypothesized that cost saving and time saving have a direct impact on purchase intention in the online open market. Davis [29] asserted that an individual's attitudes determine one's use of a system because they are attributed to the impact the system has on one's performance. Therefore, even if consumers do not prefer an open market as their purchase channel, they are more likely to choose an open market if they perceive that transacting through that online open market reduces cost or time. It can be said that purchase intention in the online open market is determined by the effect of cost and time saving.

**Hypothesis 1 (H1).** *Cost saving influences the intention to purchase through online open markets.*

**Hypothesis 2 (H2).** *Time saving influences the intention to purchase through online open markets.*

Perceived ease of use is closely related to self-efficacy, competence, and self-determination [56]. In particular, consumers with higher levels of self-efficacy are able to make an informed decision more efficiently because open market websites offer more information from more sellers. If consumers have already transacted through an open market, consumers' self-efficacy is the result of their perception of accumulated satisfaction arising from experience across various open market websites. That is why those with online shopping experience are likely to have stronger willingness to buy again via an online open market [67]. In other words, perceived ease of use, one of the determinants of self-efficacy, may positively influence purchase intention in the online open market. These discussions and reasoning lead to the following hypothesis:

**Hypothesis 3 (H3).** *Perceived ease of use influences the intention to purchase through online open markets.*

### 3.2. Motivation Hindering Factors: Concerns for E-Commerce

Consumers' privacy in the online transaction is not a novel issue because online privacy is considered one of the most essential concerns in the e-commerce industry [55]. For e-commerce users, how their personal information is used and treated by online businesses has long been a source of concern [68]. Online privacy concerns include consumers' fears about the loss and mishandling of individually identifiable information [69]. With the rapid growth of e-commerce sales, privacy concerns have become a prominent challenge in terms of public policy making [70,71]. This is because consumers' personal and financial data are shared with online retailers on almost every interaction, and consumers expect that their information should be confidentially treated [69]. The key principles of online privacy include keeping information collection and dissemination practices transparent, letting consumers choose how their personal information may be used, taking measures to ensure integrity of private information, and precluding the unauthorized disclosure of private information [72]. Privacy infringement usually involves collecting, disclosing, or using personal data obtained by e-commerce transactions in an unauthorized way [73]. Therefore, higher privacy concerns may negatively influence purchase processes in the online open market, serving as a motivation hindering factor.

**Hypothesis 4a (H4a).** *Privacy concern negatively moderates the effect of cost saving on the intention to purchase through online open markets.*

**Hypothesis 4b (H4b).** *Privacy concern negatively moderates the effect of time saving on the intention to purchase through online open markets.*

**Hypothesis 4c (H4c).** *Privacy concern negatively moderates the effect of perceived ease of use on the intention to purchase through online open markets.*

When an appropriate level of security is not guaranteed, consumers hesitate to trade through e-commerce sites [74]. That is why security is another vital concern over online transaction. The potential risks to those using credit card on the Internet are widely publicized. However, a major threat to Internet businesses is payment fraud [75]. Fraudulent activities, including illegal transactions or non-creditworthy orders, are increasing to include up to one-sixth of all purchases on the Internet. E-commerce fraud is evolving enough to include diverse types of activities like break-ins, technology disturbance, stalking, impersonation, identity theft, etc. [76]. Computer hacking has been another serious issue everyone should be concerned about. Hacking techniques can be either benign or malicious. Consumers' understanding of protection measures implemented by online open markets determines their perceived security about online transactions [9]. When ordinary consumers find that security features and protection programs are in place in a website, they are able to understand the website's intention to meet requirements regarding secure online transactions [9]. This encourages buyers to make a purchase decision because the above-mentioned protections highlight vendors' efforts to win consumers' trust and mitigate consumers' perceived risk levels [9]. Conversely, if prospective consumers who have visited an open market, due to their past experience, are concerned about the lack of protections and security features, the motivation to purchase from the online open market may be hindered. Based on these inferences, the following hypotheses are proposed:

**Hypothesis 5a (H5a).** *Security concern negatively moderates the effect of cost saving on the intention to purchase through online open markets.*

**Hypothesis 5b (H5b).** *Security concern negatively moderates the effect of time saving on the intention to purchase through online open markets.*

**Hypothesis 5c (H5c).** *Security concern negatively moderates the effect of perceived ease of use on the intention to purchase through online open markets.*

As online fraud increases, online consumers are always cautious about getting cheated or sharing sensitive information with fraudsters who commit identity theft. In this situation, how collected personal data are used or treated by online merchants is critical, and the importance of business integrity is greater now than ever before [70]. In other words, whether consumers interact with e-commerce merchants mainly depends on integrity of online businesses [55]. Therefore, if consumers have concerns over the legitimacy of online businesses, the motivation to trade through the online open market might be inhibited.

**Hypothesis 6a (H6a).** *Business integrity concern negatively moderates the effect of cost saving on the intention to purchase through online open markets.*

**Hypothesis 6b (H6b).** *Business integrity concern negatively moderates the effect of time saving on the intention to purchase through online open markets.*

Figure 1 displays this study's research model drawn from the above-mentioned assumptions.

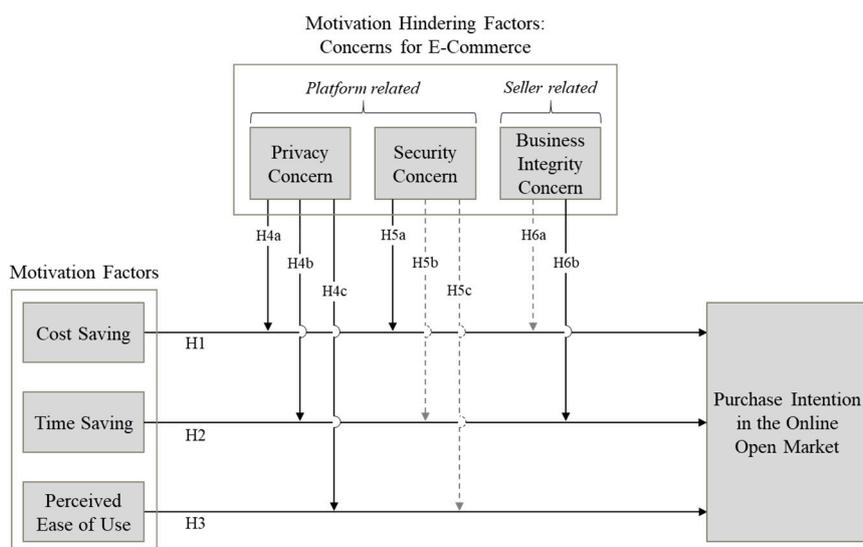


Figure 1. Research Model.

## 4. Methodology

### 4.1. Measurements

This study established reflective measurement items based on prior studies, and Appendix A contains the source of measurement items. Items to measure purchase intention in the online open market—a dependent variable of this study—was drawn from behavioral intention in light of technology use, which was already measured in the previous studies [15,54], but modified to fit for the purpose this study. Three motivation factors affecting online purchase intention in an open market were measured with nine questions. Since these factors contain dimensions of perceived values, nine measurement items consisted of (1) three items related to cost-saving drawn from prior studies of Mittal [77], and Dickinger and Kleijnen [78], (2) three items related to time-saving drawn from the work of Gipp et al. [79], and (3) three items related to perceived ease of use suggested in Davis’s TAM [23].

Concerns for e-commerce, the moderation variables, were based on the items to measure three sub-dimensions in the Kim et al. [55]’s research. Five questions drawn from Chen’s research [80] were used to measure privacy concern, and four questions were developed based on the work of Gefen [54] and Swaminathan et al. [81] to measure security concern. Business integrity concern was measured with four items suggested by Kim et al. [9]. Likert’s five-point scale was used to assess the level of agreement (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree), and age and gender acted as control variables. Measurement items went through two rounds of translation—first from English to Korean and then back to English again—which was to remove inconsistency and differences between the original and translated items [82].

### 4.2. Data Collection

For an empirical verification of the research hypotheses, this study surveyed Korean consumers who have shopped online. A Korean survey agency first accessed the online panel of over 2000 randomly selected subjects, and the survey lasted for a month in March 2019. A total of 417 or 21% were returned, which went through a series of statistical analysis using SPSS 22.0 that included frequency analysis, reliability and validity tests, and hierarchical regression analysis. The demographics of respondents were shown in Table 1. About 72% of the respondents are those in their 20s and 30s. Given that the vast majority of the online open market users are younger, the age distribution of respondents may reflect a general trend of the e-commerce. The respondents said that they frequently visit the following sites: SK Planet’s 11th street (22.8%), Coupang (Seoul, Korea, 17.3%), Gmarket (16.1%),

Naver (Seongnam-si, Korea, 12.7%), and Auction (Seoul, Korea, 11.7%)—among them, Auction and Gmarket are run by eBay Korea, a subsidiary of the US company eBay.

**Table 1.** Characteristics of the respondents.

Criteria	Freq.	%	Criteria	Freq.	%		
Age	20's	106	25.4%	Frequency of purchase in the online open market	Every day	8	1.9%
	30's	194	46.5%		Weekly	202	48.4%
	40's	73	17.5%		Monthly	166	39.8%
	50's	44	10.6%		Quarterly	30	7.2%
Gender	Men	166	39.8%		Semi annually	10	2.4%
	Women	251	60.2%		Annually	1	0.2%
Education	High school	73	17.5%	Average amount of purchase (KRW)	Less than 10,000	3	0.7%
	College	71	17.0%		10,000~50,000	68	16.3%
	Bachelor	240	57.6%		50,000~100,000	64	15.3%
	Graduate school	33	7.9%		100,000~300,000	69	16.5%
	-	-	-		300,000~1,000,000	112	26.9%
			Above 1,000,000		101	24.2%	

## 5. Results

### 5.1. Reliability and Validities

For assessment of convergent validity, factor loadings were computed. When conducting an exploratory analysis, a minimum value of factor loading higher than 0.7 is considered reliable and acceptable [83,84]. Following the results of factor analysis, SC3 was excluded as factor loadings of measurement items were below 0.5. As shown in Tables 2 and 3, 24 items were found to be reliable and valid as all factor loadings and  $\alpha$  values exceeded 0.7. Also, composite reliability (CR) values and average variance extracted (AVE) values were greater than 0.7 and 0.5, respectively, indicating this study established internal consistency. Table 4 further shows that the square root of AVEs is greater than all the correlation coefficients among other variables, demonstrating sufficient discriminant validity [83].

**Table 2.** Factor loadings and cross loadings.

	CS	TS	PEOU	PC	SC	BIC	TI
CS1	<b>0.843</b>	0.438	0.428	0.080	0.059	-0.080	0.561
CS2	<b>0.901</b>	0.494	0.508	0.098	0.071	-0.105	0.620
CS3	<b>0.797</b>	0.360	0.386	0.089	0.054	-0.074	0.480
TS1	0.538	<b>0.866</b>	0.490	0.077	0.050	-0.062	0.578
TS2	0.415	<b>0.912</b>	0.522	0.047	0.076	-0.074	0.517
TS3	0.392	<b>0.870</b>	0.453	0.039	0.094	-0.045	0.519
PEOU1	0.379	0.384	<b>0.747</b>	-0.007	0.000	0.014	0.453
PEOU2	0.352	0.505	<b>0.787</b>	-0.041	-0.049	-0.087	0.411
PEOU3	0.491	0.435	<b>0.833</b>	0.101	0.024	-0.121	0.558
PC1	0.071	0.017	-0.011	<b>0.806</b>	0.529	0.265	0.098
PC2	0.112	0.066	0.034	<b>0.899</b>	0.637	0.287	0.140
PC3	0.082	0.069	0.007	<b>0.899</b>	0.626	0.265	0.149
PC4	0.112	0.059	0.058	<b>0.841</b>	0.539	0.177	0.110
PC5	0.070	0.048	0.055	<b>0.847</b>	0.591	0.300	0.100

Table 2. Cont.

	CS	TS	PEOU	PC	SC	BIC	TI
SC1	0.088	0.029	−0.026	0.614	<b>0.881</b>	0.321	0.122
SC2	0.064	0.114	0.016	0.592	<b>0.877</b>	0.357	0.115
SC3	0.016	0.067	−0.004	0.484	<b>0.719</b>	0.477	0.080
BIC1	−0.030	0.008	−0.037	0.310	0.401	<b>0.714</b>	0.004
BIC2	−0.089	−0.037	−0.043	0.247	0.351	<b>0.865</b>	−0.048
BIC3	−0.086	−0.066	−0.110	0.346	0.438	<b>0.881</b>	−0.062
BIC4	−0.095	−0.070	−0.068	0.216	0.393	<b>0.915</b>	−0.067
TI1	0.548	0.480	0.439	0.215	0.194	−0.091	<b>0.810</b>
TI2	0.558	0.518	0.538	0.040	0.052	−0.043	<b>0.819</b>
TI3	0.515	0.512	0.524	0.101	0.078	−0.037	<b>0.840</b>

Note: CS = cost saving, TS= time saving, PEOU = perceived ease of use, PC = privacy concern, SC = security concern, BIC = business integrity concern, TI = transaction intention, the highest factor loading for each item is shown in bold

Table 3. Reliability and validity.

Variables	Average	STD	CR	AVE
CS	3.917	0.850	0.885	0.720
TS	3.691	0.943	0.914	0.779
PEOU	3.517	0.926	0.832	0.624
PC	3.917	0.792	0.934	0.738
SC	3.703	0.826	0.868	0.688
BIC	3.058	0.897	0.910	0.717
TI	3.779	0.895	0.863	0.678

CR = composite reliability, AVE = average variance extracted.

Table 4. Correlation and discriminant validity.

	CS	TS	PEOU	PC	SC	BIC	TI
CS	<b>0.848</b>	-	-	-	-	-	-
TS	0.512	<b>0.883</b>	-	-	-	-	-
PEOU	0.524	0.554	<b>0.790</b>	-	-	-	-
PC	0.105	0.063	0.032	<b>0.859</b>	-	-	-
SC	0.073	0.083	−0.006	0.684	<b>0.829</b>	-	-
BIC	−0.103	−0.068	−0.086	0.301	0.445	<b>0.847</b>	-
TI	0.657	0.612	0.608	0.143	0.130	−0.069	<b>0.823</b>

Bold numbers in diagonal are root of AVE.

In addition, the VIF values of all seven variables were found to have the highest VIF value for SC (2.216), which is lower than the threshold value of 5. This shows that no serious collinearity is found in any constructs. A confirmatory factor analysis conducted on our variables revealed that the data fit our overall model reasonably well ( $\chi^2 = 559.18$ ,  $df = 230$ ,  $RMSEA = 0.06$ ,  $CFI = 0.94$ ,  $IFI = 0.94$ ).

## 5.2. Common Method Bias

This study is exposed to the problem of common method bias (CMB) because both the independent and dependent data were gathered by the same pool of respondents with a single instrument being used. This study first chose Harman's single-factor analysis, which is a technique to identify a single factor representing the most among others to determine a common method bias [85]. By performing a principal component analysis excluding rotation, five different factors were identified in this study. This result indicates that any single factor does not take up the majority of total variance, so the data did not have a serious CMB problem. Second, this study employed a marker variable, with five items about outdoor activities to test for the effect unrelated to this study [86]. Since the average correlation

among the marker variable and the principal constructs was  $r = 0.07$ , and the correlation matrix does not indicate any highly correlated factors (highest correlation is  $r = 0.68$ , which is below the threshold of 0.90), there was minimal evidence of CMB [87]. Based on these results, it is therefore concluded that common method bias is not a serious concern in this study.

### 5.3. Hierarchical Regression Analysis

The aim of hierarchical regression analysis was to examine the moderation effects of concerns for e-commerce. Specifically, a six-step hierarchical regression was conducted to look into how three moderation variables—privacy concerns, security concerns, business integrity—influence the relationship between purchase intention in the online open market and the three antecedents (cost saving, time saving, and perceived ease of use). By doing so, the increment in  $R^2$  due to the interaction may be minutely identified [88]. Table 5 shows the results of analysis.

**Table 5.** Results of hierarchical regression analysis.

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant		3.743 *** (0.182)	0.217 (0.193)	−0.005 (0.231)	−1.895 ** (0.683)	−2.535 ** (0.799)	−2.547 ** (0.822)
Control Variables	Age	−0.002 (0.004)	0.003 (0.002)	0.003 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
	Gender	0.077 (0.071)	0.104 * (0.047)	0.089 (0.047)	0.100 * (0.047)	0.094 * (0.046)	0.092 * (0.046)
Motivation Factors	(A) Cost Saving	-	0.386 *** (0.040)	0.377 *** (0.040)	0.212 (0.219)	0.513 * (0.235)	0.625 * (0.244)
	(B) Time Saving	-	0.235 *** (0.035)	0.228 *** (0.035)	0.621 *** (0.184)	0.553 ** (0.196)	0.473 * (0.200)
	(C) Perceived Ease of Use	-	0.259 *** (0.042)	0.266 *** (0.042)	0.584 ** (0.219)	0.507 * (0.229)	0.465 * (0.230)
Concerns for e-commerce	(D) Privacy Concern	-	-	0.031 (0.046)	0.527 ** (0.178)	0.306 (0.222)	0.332 (0.227)
	(E) Security Concern	-	-	0.068 (0.049)	0.087 (0.049)	0.481 (0.257)	0.413 (0.302)
	(F) Business Integrity Concern	-	-	−0.027 (0.034)	−0.025 (0.033)	−0.023 (0.033)	0.025 (0.197)
(A) × (D)		-	-	-	0.035 (0.054)	0.191 ** (0.070)	0.181 * (0.070)
(B) × (D)		-	-	-	−0.099 * (0.045)	−0.137 * (0.060)	−0.125 * (0.060)
(C) × (D)		-	-	-	−0.082 (0.054)	−0.154 * (0.074)	−0.163 * (0.074)
(A) × (E)		-	-	-	-	−0.245 *** (0.070)	−0.201 ** (0.077)
(B) × (E)		-	-	-	-	0.057 (0.061)	−0.008 (0.066)
(C) × (E)		-	-	-	-	0.099 (0.074)	0.120 (0.075)
(A) × (F)		-	-	-	-	-	−0.080 (0.050)
(B) × (F)		-	-	-	-	-	0.073 * (0.038)
$R^2$ ( $\Delta R^2$ )		0.004 (−0.001)	0.576 (0.571)	0.582 (0.574)	0.597 (0.586)	0.609 (0.596)	0.614 (0.598)
$\Delta R^2$		0.004	0.572	0.006	0.015	0.012	0.004
F		0.871	111.863 ***	71.146 ***	54.575 ***	44.757 ***	39.688 ***

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

In this study, the following six steps were performed in a sequence. Demographic variables—age and gender—were entered at Model 1 (Step 1), independent variables—cost saving, time saving and perceived ease of use—were added at Model 2, three dimensions of concerns for e-commerce were added at Model 3, and the interaction term, multiplying independent variables by concerns for e-commerce, was added at Model 4~6. Therefore, the full model is produced at Model 6, where the effects of cost saving, time saving and perceived ease of use on online purchase intention and the moderating effects of concerns for e-commerce are jointly examined. Also, interpretation of the significance of all hypotheses comes from Model 6 analysis. The alpha protection level was set at 0.05.

According to the Model 6 results, all the effects associated with three independent variables were supported. When the moderating effects of concerns for e-commerce were controlled at Model 6, the direct effect of cost saving on transaction intention was found to be significant ( $b = 0.625, p < 0.05$ ), supporting H1. Saving more time positively influenced the intention to purchase via an online open market ( $b = 0.473, p < 0.05$ ), indicating that consumers expect to save more time by shopping in the online open market than in the offline stores. Conversely, wasting time or spending more time in shopping adversely impacted purchase intention. All these results supported H2. Perceived ease of use was also found to significantly influence transaction intention ( $b = 0.465, p < 0.05$ ), supporting H3.

#### 5.4. The Moderating Effects of Concerns for E-Commerce

This study was tested for the moderation effects of concerns for e-commerce, which aims to examine whether the moderation effects influence consumers' purchase intention. The test results show the moderation effect that privacy concern has on cost saving, time saving, perceived ease of use was found to be statistically significant. Also, the moderation effect that security concern has on cost saving and that business integrity has on time saving were statistically significant. However, unlike our original predictions, the impact of time saving and perceived ease of use on purchase intention was not hampered by security concern; thus, H5b and H5c are not supported. The interaction term between business integrity concern and cost saving was found to be insignificant ( $b = 0.080$ ); thus, H6a is not supported. The moderation effects of privacy concern on cost saving and business integrity concern on time saving were both statistically significant. However, the effects were found to be positive, which is opposed to the original prediction, hence these effects were rejected. H6a was also rejected because it appeared positive, contrary to expectations. As H4b, H4c, and H5a were supported, three out of eight hypotheses regarding moderation effects were accepted.

As (b), (c) and (d) in Figure 2 shows, privacy concern and security concern have hindering effects on consumers' purchase intention. These three graphs regarding the relationship between three motivation factors and purchase intention and they can be interpreted: the rate of rise gets smaller—the value of a slope is smaller—when the level of concerns is greater. Conversely, (a) and (e), regarding how concerns for e-commerce affect the role of cost saving (or time saving), show that the rate of rise is steeper—so the slope is greater—when the level of concerns is greater. This is consistent with the results of hierarchical regression analysis—against our initial predictions, a coefficient of the interaction term was positive.

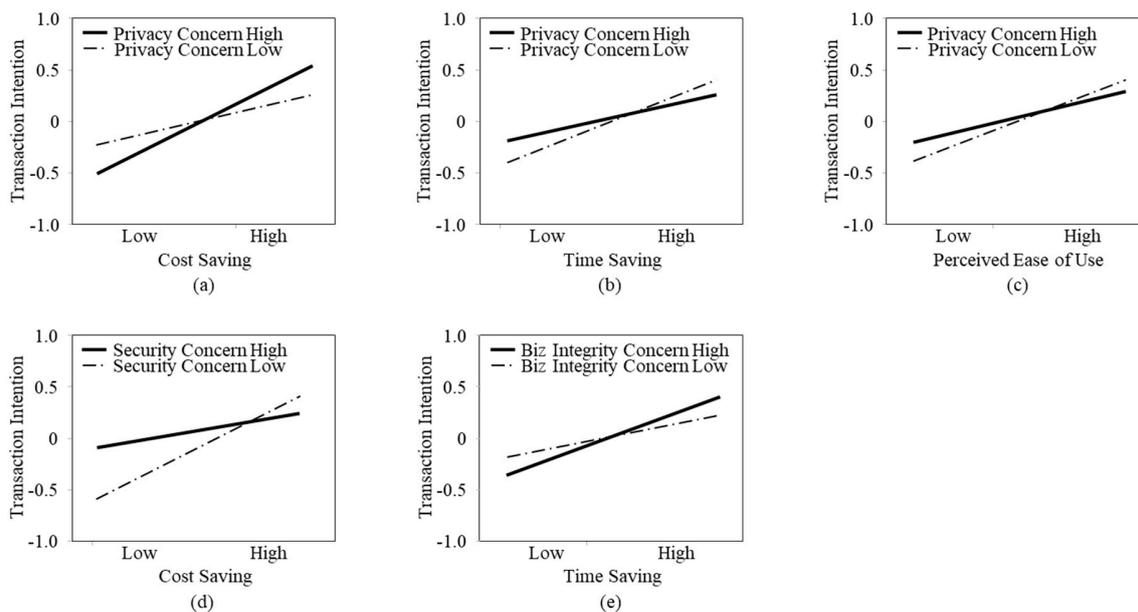


Figure 2. Moderation effect plot.

## 6. Discussion

### 6.1. Summary of the Findings and Discussion

This study aimed to discover the antecedents of consumers' purchase intention in the online open market, an online platform connecting multiple sellers and buyers, and examine their role in motivating or hindering the intention. To accomplish its goal, a survey was conducted among Korean consumers with experience of buying online via open markets, and the data collected from the survey were analyzed. Here is a summary of the research results.

First, the main effects of all three motivation factors on purchase in the online open market were supported. The two motivation factors drawn from outcome expectations mentioned in SCT and perceived usefulness suggested in TAM—cost saving and time saving—were found to positively influence purchase intention in the online open market (H1 and H2 are supported). These results are consistent with other empirical research based on TAM [29] asserting that perceived usefulness has a positive impact on technology acceptance intention (purchase intention in this study).

Like purchase intention associated with a product, perceived usefulness (the benefits consumers expect to earn from shopping at the open market, not from buying a specific product) is a main motivator in encouraging purchase intention in the open market (namely transaction intention). Therefore, consumers' perceived financial and time values positively influence choosing a purchase channel. In addition, perceived ease of use positively influences the online purchase intention in the open market, meaning H3 is supported and it is consistent with what has been found in previous studies focusing on the effect of perceived ease of use, one of the most critical antecedents of technology acceptance intention according to TAM. Consumers have self-efficacy as a result of accumulated satisfaction with experiences in the open market. Hence, consumers develop the willingness to buy once they have self-efficacy. As perceived ease of use determines self-efficacy, it has a positive impact on purchase intention in the open market.

Second, privacy concern was found to moderate the relationship between three motivation factors and purchase intention via open markets. As previously expected, the time saving–purchase intention relationship and the perceived ease of use–purchase intention relationship were negatively moderated by privacy concern, thereby supporting H4b and H4c. The same conclusion was reached by previous findings showing that higher levels of perceived risk has a harmful impact on consumers' purchase intention and behaviors in online open market. In other words, greater levels of privacy concern serve

as a hindering factor that reduces consumers' motivation to shop online via open markets. Contrary to what was originally expected, privacy concern was found to positively moderate the effect of cost saving on purchase intention in the open market, rejecting H4a. This finding can be interpreted cautiously given the characteristics of survey respondents. Participants for the survey of this research were those with experience of online shopping through online open market. Thus, their motivation to shop online could be influenced by many factors such as previous purchasing experience and trust toward the open market they used. In addition, an open market, acting as an intermediary, collects basic information from both sellers and buyers. Taking these into account, the survey respondents would expect relatively less losses from repeating purchases from a website that they previously traded through than making a first-time purchase through other websites that they have never used. Previous experience lets the respondents know which websites are trustworthy and which ones already have their personal information. Conversely, the respondents expect more losses from signing up for their first purchase and giving a new website their personal information. However, the comprehensive meaning of cost saving needs to be defined through a more careful interpretation of these findings.

Third, security concern, as originally predicted, was found to negatively moderate the relationship between cost saving and purchase intention in the open market, supporting H5a. This finding is in line with the previous research [74] showing that lower levels of perceived security make consumers hesitate to use e-commerce channels. In other words, consumers' strong concern over insufficient e-commerce security and lack of protection procedures is a hindering factor that consequently reduced the benefit of cost saving (a motivation factor). However, security concern did not have a significant moderation effect on two other antecedents—time saving and perceived ease of use. Thus, H5b and H5c were not supported. This implies that consumers' security concern is not closely intertwined with time saving or perceived ease of use.

Fourth, business integrity concern was found to have no significant moderation effect on the relationship between cost saving and purchase intention in the open market (H6a was not supported). Also, business integrity concern was found to have a positive moderation effect on the time saving–purchase intention relationship, which is in contrast to the assumption of negative effect (H6b was not supported). The reason behind this, as mentioned above, is in line with the positive moderation effect of privacy concern on the relationship between cost saving and the purchase intention. If some consumers had a satisfactory experience of online shopping at open market sites, they would feel that the sellers' integrity on those sites is guaranteed at an appropriate level. As a result, they would think that it is better to return to the sites where they have shopped before than to go to different e-commerce sites or offline stores because verifying sellers' integrity is both time-consuming and risky, and expected losses are therefore greater.

## 6.2. Theoretical and Practical Implications

The results of this study yielded several implications. Theoretically, this study considered both positive and negative motivation factors for e-commerce in the context of purchasing through the online open market and conducted a comprehensive exploration and integrated analysis of the factors by building its framework based on existing theories including technology acceptance model, social cognitive theory, social exchange theory. To describe factors influencing purchase intention in the online open market, the key terms were suggested: two terms to explain positive motivation factors (economic advantages i.e., cost saving, time saving and convenience i.e., perceived ease of use) and one term to explain negative motivation factors (perceived risk). An open market is different from online shopping malls as it is a platform connecting multiple buyers and sellers, which allows open market users to compare products and deals offered by different sellers in a single open market site. Users also compare open markets with offline stores or other online shopping malls, and even comparison among open market websites is possible. These comparison processes enable users to have outcome expectations that are cost saving and time saving. Consequently, consumers are motivated by the benefits of cost and time saving, which in turn leads to intention to use an online open market.

In addition, this study conducted a two-pronged examination of concerns for e-commerce. In other words, privacy concern and security concern were examined in the context of an online shopping platform, while business concern was analyzed from a seller-focused perspective. This is because sellers are not the operator or owner of a marketplace under an online platform, unlike online shopping malls. The main four players in an open market are sellers, buyers, third parties, and the online open market itself, hence sellers are just one of the participants in the marketplace built and run by the open market. Since concerns over privacy and security are determined by the physical environment of an open market, its business policies, and its operation systems, they are in the domain of platform-related perspective. However, business integrity is not relevant to a platform, as it is determined by the acts of sellers. For this reason, business integrity influences perceived usefulness, instead of perceived ease of use, which is earned by using a particular platform.

Alongside the above-mentioned academic contributions, this study provides practical implications for online open market providers. Perceived risk components examined by this study implies that the first thing open market providers must do is understanding potential obstacles faced by both users and non-users, and based on that understanding, they are able to focus on designing reliable systems, appropriate policies, and optimal solutions. Those well-prepared rules and guidelines will help potential customers handle perceived risk effectively and ultimately mitigate the risk to an acceptable level. Also, these efforts will turn non-shoppers into active shoppers who are willing to increase their transaction volumes.

E-commerce users want to feel secure in terms of their privacy protection. There are possible measure that open market providers can consider, including allowing visitors to be informed of how their personal information is used and offering consumers choices of privacy preference [89]. If open market providers are more conscious of privacy concerns, they will post privacy policies clearly and let users have choices of sharing personal information or restricting its use.

Also, associations and/or corporations specializing in cyber security offer a variety of solutions that are designed to mitigate consumers' concerns over data breaches, discloses of private data, or lack of integrity coupled with poor customer service in handling unfulfilled orders [72]. These solutions assess internal control procedures to help consumers have trust in e-commerce instead of being affected by perceived risks. To conclude, consumers' perceived effectiveness of the chosen solutions plays a crucial role in reducing concerns for e-commerce, and it eventually has a significant impact on consumers' online purchase intention.

### *6.3. Limitations and Directions for Future Research*

Although this study provides useful implications, there are potential limitations that can affect the findings of this study. First, this study mainly considered extrinsic motivations factors—perceived usefulness and perceived ease of use—and did not focus on intrinsic motivation factors. As e-commerce is diversifying itself, resulting in fiercer competition, just giving financial advantages is no guarantee of success any longer. Instead, intrinsic factors have become important in recent years, as it has been proven that non-financial benefits such as giving customers a memorable experience encourages consumers to repeat purchase and increase loyalty [56]. Although this study focused on extrinsic motivation drawn from outcome expectations suggested in SCT, future studies need to explore intrinsic motivation factors and figure out how those factors interact with motivation hindering factors.

Second, there is a national diversity in concerns for e-commerce due to multiple factors, such as e-commerce development status, open market providers' efforts to address security issues, and cultural differences. Especially, perceived risks were found to be significantly influenced by cultural differences [49]. As a result, consumers' behaviors of browsing, shopping or transacting in the open market websites differ from nation to nation. As this study is confined to investigating Korean users' purchase behavior, its applicability may be limited. To gain comprehensive implications, future work needs to understand the e-commerce market in a particular country and also consider national or cultural differences.

Third, it needs to identify the cause why two hypotheses (H4a and H6b) were rejected. As discussed in Section 6.1, privacy concern was found to have a positive moderation effect on the relationship between cost saving and purchase intention and business integrity concern was found to have a positive moderation effect on the relationship between time saving and purchase intention. These results are opposed to what was originally hypothesized, and the reason behind this is the survey respondents were those who have shopped in online open markets, which indicates that results may be affected by consumers' purchase experience and levels of trust. From this standpoint, future studies will be able to explore a direct effect of consumers' shopping experience by measuring stability, reliability or satisfaction levels. However, the findings of future studies will be affected by what platforms the respondents have used for purchase. Therefore, it is necessary to analyze differences by the types or characteristics of platforms or conduct research by controlling for the impact of platforms. Another possible approach is to study people who have no experiences of buying items from open markets. Since online shoppers are less risk-averse compared to non-online shoppers [38], those who never shopped in open markets may have different risk perception. As e-commerce has transformed over time and new platforms are emerging, analyzing risks perceived by non-online shoppers may provide useful implications.

Finally, this study may be exposed to common method bias because the same subjects responded to the same questionnaire at a specific period of time. Of course, Harman's single factor analysis and marker variable technique were conducted to prove that the bias does not significantly affect the findings of this study. Nevertheless, the survey using the same questionnaire does not entirely remove the bias. Therefore, future studies could conduct a survey at different times or select different groups of respondents who are required to answer different questions. By doing so, future research would be able to overcome these limitations and provide further practical implications.

## 7. Conclusions

This study seeks to explore the drivers and barriers influencing consumers' intention to purchase through the online open market based on the insights drawn from existing theories such as the technology acceptance model, social cognitive theory, and social exchange theory. The research proceeded with the survey administered to 417 Korean consumers to identify both motivation factors and motivation hindering factors of online open market shopping. Then, a hierarchical regression analysis was conducted. The results provide evidence supporting the effects of motivation factors on purchase intention and also clearly show moderating effects of concerns for e-commerce; privacy concern by time saving, perceived ease of use, and security concern by cost saving were found to be statistically significant. Unlike what was previously assumed, privacy concern by cost saving and business integrity concern by time saving were found to have a positive significance.

These findings suggest the following two implications: (1) consumers may visit and buy in the online shop they can trust based on their past shopping experience in order to mitigate concerns for e-commerce, and (2) deeper understanding and integrated analysis of concerns for e-commerce are required. What is more, the findings and implications in this study allow online open market companies to deepen their understanding of both positive factors and hindrances, thereby developing strategies to attract more visitors.

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## Appendix A

Table A1. Constructs and questionnaire items.

Questionnaire Items	Source
Cost Saving (CS): the extent to which people believe that the cost saving is improved by using an online open market	
CS1. I purchase most products I want in online open market because they are generally cheaper. CS2. Shopping in the online open market is beneficial in terms of cost saving. CS3. Shopping in the online open market can save more money than purchasing at offline stores.	[77,78]
Time Saving (TS): the extent to which people believe that the time saving is improved by using an online open market	
TS1. I shop online in the open market mainly because it can save time. TS2. Shopping in the online open market is beneficial in terms of time saving. TS3. Shopping in the online open market can save more time than purchasing at offline stores.	[79]
Perceived Ease of Use (PEOU): the extent to which people believe that using an online open market is effortless	
PEOU1. Purchasing in the online open market is efficient in many ways. PEOU2. Purchasing in the online open market is not a hassle. PEOU3. I can easily buy anything I want in the online open markets.	[89]
Transaction Intention (TI): intention to purchase in online open market	
TI1. I plan on shopping in the online open market sooner or later. TI2. I plan on purchasing through online open market instead of offline stores. TI3. I intend to recommend online open market I've shopped to my family or friends.	[15,54]
Privacy Concern (PC): consumers' fear about the lack of protection of individually identifiable information in the online open market	
PC1. I am concerned that online open market companies are collecting too much personal information from me. PC2. I am concerned that online open market companies will use my personal information for other purposes without my authorization. PC3. I am concerned that online open market companies will share my personal information with other entities without my authorization. PC4. I am concerned that unauthorized persons (e.g., hackers) may have access to my personal information collected by online open market companies. PC5. I am concerned about the privacy of my personal information during e-transactions.	[55,80]
Security Concern (SC): consumers' fear about the lack of protection during an e-commerce transmission	
SC1. I am concerned that online open market companies will not implement appropriate security measures to protect their consumers. SC2. I am concerned that online open market companies will not ensure that my transactional information is protected from being altered or destroyed accidentally during an e-commerce transmission. SC3. I do not feel secure about the electronic payment system of online open market companies *. SC4. In general, I hesitate to make e-transactions because I am concerned about the security of my credit card information.	[54,55,81]
Business Integrity Concern (BIC): consumers' worry about getting cheated by seller or providing sensitive information to crooks that perpetrate identity theft	
BIC1. In general, I am concerned that sellers are untruthful in their dealings with me. BIC2. In general, I would characterize that sellers are not honest. BIC3. In general, I am concerned that sellers would not keep their promises made on their website. BIC4. In general, I am concerned that sellers are not sincere and genuine.	[9,55]

\* excluded item.

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