

# **A Study on the Discontinuance Intention on O2O Commerce: With a Focus on the Mediating Effects of Perceived Risk and User Resistance**

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## **Abstract**

*Online-to-offline (O2O) commerce is emerging as a global issue as the number of consumers going to and fro from online to offline in search of optimal shopping conditions based on price and convenience rises rapidly. O2O commerce effectively connects online and offline services, thus providing services to consumers with greater convenience. Compared to such remarkable advancement, however, there is a noticeable shortage of research in this field. A review of preceding studies shows that a large part of the research that has been conducted is from the perspective of acceptance or proliferation, which are initial stages in the research of a field. On the contrary, research on the discontinuance intention of consumers already using O2O commerce are highly rare and calls for further research.*

*This study examines consumers' negative perception of O2O commerce and how this affects discontinuance intention of a service. The data utilized in the research was collected through a survey. It reached a conclusion by conducting an empirical analysis using structural equation methodology and proposed theoretical and practical suggestions.*

**Keywords:** *O2O Commerce, Perceived Risk, User Resistance, Discontinuance Intention*

## **1. Introduction**

The industry of Online-to-offline (O2O) commerce is undergoing global rapid growth as a result of the dramatic proliferation of smart phones and mobile devices [6]. Extracting only the merits of 'convenient, but uncertain' online commerce and 'inconvenient, but certain' offline commerce to offer a tempting combination of services, O2O commerce is responding adequately to changing shopping patterns of increasingly smart consumers. It is widely utilized in a wide-range of sectors, including restaurants, online travel, real estate, ticket bookings, car rentals, mobile internet and electronic coupons.

Such tremendous growth, however, gives rise to various problems for consumers and businesses. These problems include excessive price competition among O2O service providers, consumer deception caused by shopping malls providing incorrect information to induce customers to make a purchase, deteriorating quality of products and services, and a lack of supply vis-a-vis demand, exacerbating customer complaints and damages [15].

Solving these problems will require research to promote not only the quantitative, but also qualitative growth of the O2O market. Research in O2O commerce is actively

underway in other countries, namely the United States and China, unlike the domestic arena where there is an acute lack of such research. Studies conducted in Korea comprise mainly of O2O-related industry reports or focus on case analyses that do not propose detailed solutions or the way forward for O2O service providers or the overall industry. This calls for empirical research based on the perspectives of consumers who have hands-on experience using O2O commerce.

A review of preceding research shows there is an abundance of research expanding external variables from the viewpoint of accepting new information technology, primarily TAM (Technology Acceptance Model) or UTAUT (Unified Theory of Acceptance and Use of Technology). In contrast, there is a noticeable lack of discussion on user resistance and discontinuance intention of existing services and systems that are intricately related to the utilization of new information technology. These studies define perceived usefulness and ease of use, among others, as critical precedence factors in accepting information systems, but the variance explanatory power used to explain how information systems are actually used reaches a mere 35-40 percent, evidently showing there are additional factors to be considered [24]. Furthermore, the studies concentrate on factors with positive implications on user behavior, and therefore, are limited in offering an overall interpretation or new insights on the research model.

The objectives of this study are to examine the impact of the negative perception on O2O commerce of consumers on perceived risk, user resistance and discontinuance intention by adopting an approach which differentiates from previous studies, identify core factors impeding the acceptance and proliferation of O2O commerce, provide reference materials to enable domestic O2O commerce providers to establish customized marketing strategies based on relevant research results to minimize such negative factors, and provide the theoretical framework to promote the industry.

## **2. Theoretical Background**

### **2.1. Negative Perception of O2O Commerce**

#### **2.1.1. Privacy Concern**

Privacy concern is a feeling of anxiety that one's privacy might be lost resulting from an exposure of personal information [5]. According to the research by Fusilier et al. [10], people who believed they could control the usage of their information had lower privacy concerns. Culnan [3] claimed that privacy concern was a general concern over a loss of control and unauthorized secondary use of personal information, and developed a survey to measure its variables. Numerous studies have been conducted on privacy concerns in terms of intention to use internet services or enter e-commerce transactions [19]. Recent studies regarding e-commerce conducted in association with mobile technology are producing research reports associated with mobile services, among which privacy concerns are underlined as one of the most critical issues.

Judging from such preceding research, it is necessary to examine privacy concern as an important factor that impedes the final purchase of a product or service in O2O commerce.

#### **2.1.2. Information Uncertainty**

Pavlou *et al.* [20] asserted that the asymmetry of perceived information gave rise to uncertainty. Asymmetry of perceived information arises when a consumer believes the seller possesses a greater amount of higher quality information than oneself. The greater the level of asymmetry, the greater the uncertainty. Dimoka et al. [4] stated that uncertainty in a purchase increased due to technical problems of internet transactions and seller opportunism. He claimed that in internet transactions, all information regarding the

characteristics of a product, including product defects, are not represented with transparency, and there is a likelihood of a seller intentionally withholding product information. Luo et al. [17] conducted a study on the impact of product uncertainty on online shopping and seller visibility on online customer satisfaction. They believed design, service standards and pricing were important factors, and that uncertainty had a significant impact on customer satisfaction.

As such, information asymmetry in product quality and design that occurs in O2O commerce creates uncertainty in the product for customers and acts as an important factor with a negative influence on purchase decisions.

### **2.1.3. Annoyance**

Annoyance is a negative feeling a customer has regarding various forms of stimulation [30]. Batra and Ray [1] claim that annoyance has a negative effect on attitude, but that it can also be reduced when a wide group of customers seek and acquire related information and service. Lee et al. [14] describes annoyance as having a negative impact on purchase intent, with the degree of the impact increasing distinctively if a buyer suffers inconvenience or harbors ill feelings. Numerous other preceding studies suggest that annoyance has a negative impact on consumer purchase intention and attitude.

Excessive product advertisement and promotion that may be present in O2O commerce can incite annoyance compared to helpful information, and in turn, cause a negative attitude or intention towards the purchase of a product or service.

### **2.1.4. Negative Social Impact**

Information gathered through social relationships, such as one's social group or mass media, has a large effect on a person's decision making process [29]. With financial institutions and online companies suffering damages due to hacking, from time to time, numerous reports are distributed via various forms of mass media on concerns of information leakage and risks of security vulnerability. Such negative reports on security by the mass media are highly influential, compelling the society to focus on information technology and harbor concern about security. Negative social impact has a negative effect on an individual's attitude or behavior, and is regarded as a critical factor in explaining users' intention to use.

With the advancement of SNS, sharing and proliferating product information and purchase experiences have become easier and more efficient than ever before. In this environment, the effect of negative social impact on consumers will be undoubtedly significant.

## **2.2. Perceived Risk**

Bauer [2] first introduced the concept of perceived risk in customer action analysis and claimed that customer action is a matter of choice accompanied by risks. Various forms of perceived risks associated with purchasing a product act as a large obstacle in promoting internet commerce. Peter and Ryan [21] asserted that the perceived risk of consumers was a highly critical factor in the decision-making process of a purchase and that it had a meaningful relation with the act of searching for information regarding a product purchase. The risk perceived by the consumer when purchasing a product through e-commerce is a highly critical factor, and it may also have a negative effect on purchase decisions. The decision to change, delay or withdraw the intention to purchase may have been mostly influenced by the consumer's perceived risk. The act of purchasing a product is always accompanied with risks, and this has a greater impact on consumers when they lack confidence. As such, detailed research on perceived risks differ slightly according to the scholar, but in general, it can be summarized as the uncertainty regarding the results

after making a decision and an expectation of loss as a result of that decision. This is one of the most actively discussed subjects in online commerce research.

Therefore, it may be gathered that perceived risk is definitely an important factor that influences overall purchase activity in O2O commerce.

### **2.3. User Resistance**

User resistance has been studied after Sheth [25] in Innovation Dispersion Theory about the psychological state of personal resistance. Ram [22] suggested the Innovation Resistance Model to explain factors that create customer resistance and their relationships. According to Lapointe and Rivard [16], users of information systems develop aggressive opinions regarding the mutual interaction of online and offline environments and systems, and this leads to resistance behavior. In a recent study, Lee et al. [13] claimed that privacy risk did not have a direct impact on user resistance, but an indirect impact through privacy concern. He expanded the meaning of 'change' and conducted research from the perspective of resistance to innovation.

However, resistance cannot be regarded as an absolute opposite concept for 'acceptance' since the user can refuse or have negative opinions on innovation during the usage process. In essence, the negative response of resistance does not always arise in a change or acceptance phase, and may lead to continuous refusal or resistance to use as the user recognizes problems that were not initially perceived while using a product.

This implies that the above-mentioned consumer's negative perception of O2O commerce acts as a precedence factor on user resistance.

### **2.4. Discontinuance Intention**

Discontinuance is the decision to no longer use or refuse to use an innovative product or service after temporarily accepting it [23]. This has been referred to as 'dissolution behavior' or 'bad behavior' in marketing. Lee and Cha [31] studied the service switching behavior of consumers by using the concept of negative consumer sentiment (regret and disappointment). The discontinuance of O2O commerce may also be regarded as similar to the post-purchase behavior discussed in marketing.

Notwithstanding, the discontinuance mentioned by Rogers [23] is a different concept from acceptance, and this decision can be categorized into two types in the post-acceptance and acceptance phases. Post-acceptance behavior is similar to the post-purchase behavior in marketing, and the expectancy disconfirmation theory is the most general theory explaining post-purchase behavior. According to the expectancy disconfirmation theory, the gap between a consumer's prior expectations and perceived performance after a purchase triggers satisfaction or dissatisfaction. In particular, the failure of perceived performance to meet the customer's expectations will result in dissatisfaction, which will play a significant role in the decision to whether or not continuously use an information technology after temporary adoption. In essence, it is claimed that dissatisfaction is an important precedence variable in discontinuance behavior.

The above-mentioned negative perception on O2O commerce may act as a critical factor triggering consumer dissatisfaction, which may in turn, act as an important factor causing discontinuance intention.

## **3. Research Design**

### **3.1. Research Model Design**

This research is established on the basis of the theory of user resistance in information systems. According to the study by Lapointe & Rivard [16], users of information systems and services perceive risk through interaction with the target system and service, and this

risk then leads to user resistance. Based on this theory, this study established an overall integrated framework on the negative perception, perceived risk, user resistance and discontinuance intention of users regarding O2O commerce based on a comprehensive theoretical review of each component factor examined above.

### 3.2. Model Hypotheses

#### 3.2.1. Independent and Mediating Variables

Dowling [8] states that the greater the concern for privacy, the more seriously is perceived risk recognized. According to a study by Van Slyke et al. [26], information privacy concern was considered to have a positive effect on perceived risk. In essence, privacy concern is considered as an element of perceived risk, which is a precedence factor to user resistance. When defining privacy concern as an individual's anxiety regarding the loss of control over one's personal information, the perceived risk can be regarded as increasing user resistance.

*H1: Privacy concern has a positive effect on perceived risk.*

*H2: Privacy concern has a positive effect on user resistance.*

*H3: Perceived risk has a positive effect on user resistance.*

Uncertainty regarding an online purchase occurs when information or situation is not perfectly analyzed, causing mental factors, such as anxiety and pressure. Dowling [7] also claimed that when a customer makes a wrong decision during a purchase process, he is at a disadvantage, and as this feeling of being disadvantaged grows, so does the risk factor he perceives.

*H4: Information uncertainty has a positive effect on perceived risk.*

*H5: Information uncertainty has a positive effect on user resistance.*

According to the study by Greyser [11], if a consumer is provided with useful information when purchasing a product, but still feels unpleasant sentiments and dislike towards it, such usefulness will lose effect, giving way to annoyance, which may likely lead to user resistance. Batra and Ray [1] claimed that negative emotions, such as annoyance, can have a negative influence on intention and attitude, and as in a preceding research on mobile technology, a service provided regardless of place or time can provoke repulsion in customers, making them feel irritable and think it intrusive.

*H6: Annoyance has a positive effect on perceived risk.*

*H7: Annoyance has a positive effect on user resistance.*

Yang et al. [12] stated that negative social impact wielded a greater influence on online service users than offline service users. As shown in UTAUT (Unified Theory of Acceptance and Use of Technology) by Venkatesh et al. [27], social influence affects user action intention, and recent negative social factors have a negative impact on users using a certain service. The information obtained through social relationships, such as one's relationship with others, or mass media has a significant effect on decision making.

*H8: Negative social impact has a positive effect on perceived risk.*

*H9: Negative social impact has a positive effect on user resistance.*

### 3.2.2. Mediating and Dependent Variables

According to the study results of Wu and Wang [28], the risk perceived in mobile commerce is the factor that influences the continuous suspension of use of an information technology service after its initial acceptance. Dowling [7] asserted that situations of a purchase differ by consumer, and therefore, even in one product group, the level of perceived risks may differ among individuals, which also affects their decision in making a purchase.

*H10: Perceived risk has a positive effect on discontinuance intention.*

In a study by Kim et al. [18], it was contended that the intention to discontinue using a service was an inevitable result of a user's resistance behavior, and that once resistance intention or behavior is formed, it may lead to discontinuance intention. Despite the development of such user resistance intention or attitude, however, it may not lead to actual resistance behavior. In essence, user resistance may be a critical factor directly triggering discontinuance intention.

*H11: User resistance has a positive effect on discontinuance intention.*

## 4. Data Analysis and Results

### 4.1. Data Collection and Demographic Characteristics

The data collection for this study was conducted through a survey. The target of the survey was consumers with experience using O2O commerce in Seoul, Korea. The survey was conducted over a period of two months, and was carried out in both online and offline environments. The number of collected responses in both venues were 106 and 248, respectively. With the exception of 37 survey responses with missing responses or unfaithful completion, the total number of survey responses used for the final analysis was 317. Furthermore, SPSS 22.0 and AMOS 22.0 were the instruments used for the analysis.

Among a total of 317 respondents, 174 respondents were male (54.89 percent of total) while 143 respondents were female (45.11 percent of total), showing there were relatively more women than men among the respondents. In terms of age group, 189 respondents were in their twenties, accounting for 59.62 percent of total respondents and showing there was a predominant age group. By vocation, white collar workers and students comprised the highest group with 106 (33.43 percent of total) and 93 (29.34 percent of total) persons, respectively. As for monthly wages, the number of respondents receiving two to three million Korean won was the highest. In terms of level of academic achievement, university graduates occupied the largest group.

### 4.2. Confirmatory Factor Analysis

The confirmatory factor analysis (CFA) is an analysis of factors after predetermining the relationships between variables upon a theoretical background. It is used as a method to confirm inherent factor dimensions and hypotheses based on the literature review of the researcher. On the basis of the results of this analysis, a feasibility test was conducted. Fornell & Larcker [9] established the standard for the feasibility test: First, the  $\lambda^2$  value, which is the influence of the latent variable on the measured variable, must exceed 0.5. Second, the construct reliability, also called 'composite reliability', must exceed 0.7. Third, the average variance extracted must exceed 0.5. As a result of the feasibility test, the  $\lambda^2$  value of the measured variable NS2 (negative social impact) was 0.347, which did not meet the standard of 0.5. However, the concept reliability of the latent variable and

the extracted average variance exceeded the standard, thereby making it appropriate to secure overall reliability. The details are listed in <Table 1>.

**Table 1. Reliability Verification in Confirmatory Factor Analysis**

Latent Variable	Observed Variable	Unstandardized $\lambda$	S.E.	C.R.	Standardized $\lambda$	Standardized $\lambda^2$	Error	Composite Reliability	AVE
Privacy Concern	PC1	0.903	0.085	10.642	0.708	0.501	0.499	0.789	0.555
	PC2	1			0.767	0.588	0.412		
	PC3	0.947	0.087	10.929	0.758	0.575	0.425		
Information Uncertainty	IU1	0.984	0.064	15.389	0.85	0.723	0.278	0.853	0.661
	IU2	1			0.834	0.696	0.304		
	IU3	0.92	0.066	13.95	0.751	0.564	0.436		
Annoyance	AN1	0.823	0.041	20.194	0.801	0.642	0.358	0.933	0.777
	AN2	0.91	0.034	26.422	0.895	0.801	0.199		
	AN3	1			0.936	0.876	0.124		
	AN4	0.934	0.036	25.854	0.888	0.789	0.211		
Negative Social Impact	NS1	0.884	0.083	10.599	0.768	0.59	0.41	0.77	0.532
	NS2	0.754	0.082	9.195	0.589	0.347	0.653		
	NS3	1			0.812	0.659	0.341		
Perceived Risk	PR1	1	0.072	13.928	0.832	0.692	0.308	0.837	0.632
	PR2	0.924	0.069	13.435	0.791	0.626	0.374		
	PR3	1			0.761	0.579	0.421		
User Resistance	UR1	0.881	0.051	17.403	0.798	0.637	0.363	0.883	0.716
	UR2	1			0.909	0.826	0.174		
	UR3	0.903	0.049	18.315	0.827	0.684	0.316		
Discontinuance Intention	DI1	0.905	0.041	22.179	0.858	0.736	0.264	0.935	0.784
	DI2	0.994	0.039	25.726	0.916	0.839	0.161		
	DI3	1			0.907	0.823	0.177		
	DI4	0.947	0.043	22.211	0.858	0.736	0.264		

### 4.3. Discriminant Validity Analysis

The discriminant validity analysis was conducted to enhance the strictness of this study. It aims to measure the difference between latent variables. Low correlation between the latent variables signifies discriminant validity, whereas high correlation refers to no discriminant validity, which means that the latent variables are not independent structural concepts. Each average variance was extracted and was found to have discriminant validity. Upon comparing the square value of the correlation coefficient of two latent variables, if the AVE of the two variables is higher than the square value, they are considered to have discriminant validity. Moreover, the AVE is said to have a concentrated validity when it exceeds 0.5, meaning that the half of the variance must be explained through the construct in order to accept the items. In this research, the square value of the correlation coefficient between the structural concepts did not exceed the AVE, signifying that the discriminant validity is secured. The details are listed in <Table 2>.

**Table 2. Discriminant Validity Analysis**

	Privacy Concern	Information Uncertainty	Annoyance	Negative Social Impact	Perceived Risk	User Resistance	Discontinuance Intention
Privacy Concern	<b>0.555</b>						
Information Uncertainty	0.059	<b>0.661</b>					
Annoyance	0.007	0.058	<b>0.777</b>				
Negative Social Impact	0.114	0.116	0.008	<b>0.532</b>			

Perceived Risk	006	0.107	0.274	0.02	<b>0.632</b>		
User Resistance	0.001	0.094	0.176	0.004	0.311	<b>0.716</b>	
Discontinuance Intention	0.004	0.088	0.071	0.005	0.139	0.18	<b>0.784</b>

#### 4.4. Fitness of Research Model

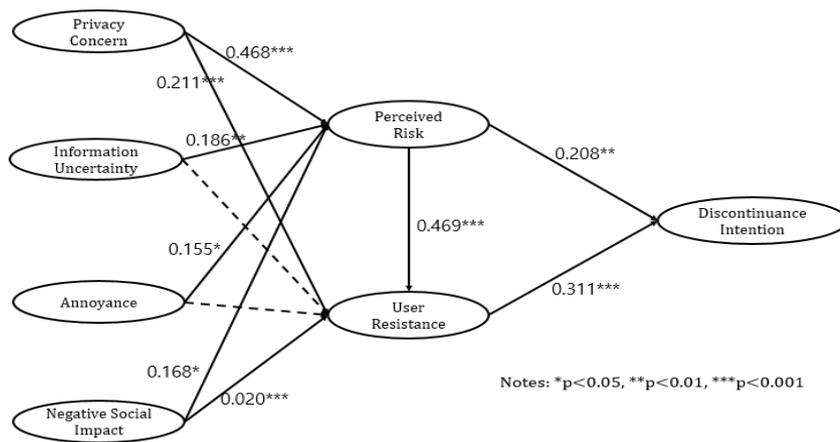
Prior to conducting the pathway analysis, an analysis of modification indices was carried out on the measurement model to prove its overall suitability for the research. As a result, the RMR value, which is the root mean-squared error of approximation, was recorded slightly higher than the significant standard of 0.08 as represented in <Table 3>, but it was close enough, and other suitability values showed a satisfying level. Given the difficulty in obtaining satisfying suitability for all values in structural equation models and the absence of an absolute standard regarding the acceptability of a model, this measurement model was determined to have high overall fitness.

**Table 3. Structural Equation Model Fit Test**

Index		Research Model	Significant Level
Absolute Fit Index	Overall fitness of model	X <sup>2</sup> (P)	364.936 P=0.000
		X <sup>2</sup> /df	1.713
		RMSEA	0.048
		RMR	0.084
	Explanatory power of model	GFI	0.914
AGFI		0.888	
PGFI		0.705	
Incremental Fit Index	Independent model v.s. Research model	NFI	0.923
		IFI	0.966
	Research model	TLI (NNFI)	0.96
		CFI	0.966
Parsimonious Fit Index	Model complexity considerations	PNFI	0.777
		PCFI	0.813

#### 4.5. Hypotheses Testing

The path analysis was carried out to verify the hypotheses proposed in this research. The summarized results are as shown in <Figure 1>. First, the negative perceptions of users on O2O commerce (privacy concern, uncertainty of information, annoyance, and negative social impact) had a significant impact on perceived risk. Among them, privacy concern was analyzed to be the most influential factor ( $\beta=0.468$ ) and annoyance, the least ( $\beta=0.155$ ). Second, although the uncertainty of the information and annoyance had a direct positive effect on perceived risk, it did not influence user resistance. On the other hand, privacy concern and negative social impact were analyzed to be important factors that directly provoked user resistance. The influence of privacy concern ( $\beta=0.211$ ) was higher than that of negative social impact ( $\beta=0.020$ ). Third, the perceived risk of the user regarding O2O commerce was an important factor that directly led to user resistance. Perceived risk and user resistance had a direct influence on the intention to suspend use of O2O commerce. Lastly, user resistance ( $\beta=0.311$ ) had a greater impact on discontinuance intention compared to perceived risk ( $\beta=0.208$ ).



**Figure 1. Testing Results of the Structural Equation Model**

## 5. Conclusion

### 5.1. Discussion of Findings

O2O commerce is an integrated form of online and offline commerce, but the risk factors perceived by the consumer are substantially the same as those that have been proposed in preceding research on commerce. Essentially, this implies that changes in the form of shopping fail to change the existing perception of risk for consumers. Among the four negative perceptions proposed in this study, privacy concern exerted an influence considerably greater than that of others. With the emergence of Big Data, the quantity of data has increased explosively, along with the increase of victim mentality among consumers regarding an excessive exposure of personal information. Privacy concern is the thought that personal information can be illegally used by another person or used for purposes other than for which it was provided. It is the most critical risk factor perceived by consumers in the O2O sector, and therefore, prior to rolling out promotions of the product itself, companies providing O2O commerce services will need to adopt an approach which will maximize their ability to thoroughly protect the personal and purchase information of their customers and enable them to control their own information.

Moreover, O2O commerce service providers should construct a series of security processes where the collected information is necessarily controlled by the consumer and the use of such information requires their consent. The transparent use of information will be a short cut to minimizing privacy concerns. Other negative social influences will be delivered through various channels consumers have access to according to their environment. This calls for detailed response measures, such as emphasizing the positive social influence of O2O commerce and the creation of positive word-of-mouth by improving product and service quality.

Lastly, the risk of customer churn always exists even in the case of incumbent customers. This calls for measures to respond to various risk and resistance factors that consumers experience while using O2O commerce in order to minimize the churn rate and maximize customer loyalty. In a bid to reduce such negative factors, related businesses must recognize the need for improvement in various aspects, namely control over customer information, product and service quality, customized service and social position of the industry itself.

## 5.2. Limitations and Future Research

An analysis was carried out by defining the factors of negative perception in the process of using O2O commerce in four dimensions: privacy concern, information uncertainty, annoyance and negative social impact. However, these four factors are not sufficient to explain the overall negative perception of the customer. Future research is suggested with broader and more specific and diverse variables for more in-depth research.

This study is limited in the generalization of its survey results because, despite the sufficient number of samples, more than fifty percent of the participants were in their twenties and the survey was limited to people living in Seoul. Customer perceptions differ by age and region, therefore, it is necessary to carry out an analysis and comparative research by classifying the respondents in greater detail.

Due to a lack of research on O2O commerce in Korea, the theoretical base is not abundant enough to generalize the study results. Going forward, it will be imperative to strengthen every step of the research process in this field.

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