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Perspective of Consumer

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Abstract: The online-to-offline (O2O) commerce has been one of the hottest topics nowadays, but which features of the O2O commerce drive the consumers to be involved into are still blur. To figure out the question, two important features of O2O commerce, i.e., offline experience and the integration of online and offline information, were incorporated into an empirical model to examine their influences on the technology and economics attributes of O2O commerce from the perspective of consumers. The two features were confirmed to exert significant impacts on consumer's acceptance of O2O commerce. Finally, the implication and the direction of future study were discussed.

Keywords: online to offline; offline experience; the integration of online and offline information; technology acceptance; e-commerce

1. INTRODUCTION

Recently, Consumers prefer to search and purchase online, and then enjoy the service offline, which is called online to offline (O2O) commerce by Rampell [1]. He described the conception of O2O as finding consumers in cyberspace and then bringing them into physical stores. O2O is initiated in service industry, such as traveling booking, catering booking, and entertainment tickets. O2O platforms are very popular now, such as Groupon, Restaurant.com, Ctrip, Mei Tuan.com, Dianping.com, National express.com. Most of them focus on traveling and local living service industry. Since the inherent nature of inseparability of service, consumers have to take part in the offline consumption of purchased services online. Thus, O2O commerce model is very appropriate for personal living service industry.

The popularity of smart phone greatly prompts the process of O2O commerce. Ubiquity of connectivity makes it much easier for consumers to shift between online and offline. Consumers may visit physical stores while still enjoy online services. It is reported that 89% of U.S. consumers adopt Research Online, Purchase Offline (ROPO), and 84% of Chinese consumers search a good in real store before purchasing online[2]. Consumers are becoming shrewder with the assistant of smart phones. Some department stores have just become "showrooming" of online shops, thus, sales of traditional retailing dropped dramatically. The pattern of "buy online, pick up in store" has been an important way to keep sales. Simultaneously, traditional pure online players also encounter the mediocre sales increase nowadays. Physical experience has been lost in online shopping, which is crucial to consumer, especially for those high-value or personalized products. Therefore, there is a severe demand of integrating two channels.

More and more merchants aim at the potential benefits of O2O commerce, but what drives consumer's purchase in O2O manner is still blur to practitioners. This article aims to examine consumer adoption of O2O commerce, and verify the significant factors influencing consumer purchase in O2O context.

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2. CONCEPTUAL BACKGROUND

2.1 Conception of O2O commerce

Rampell abstracted the concept from group purchase website, which refers to attracting consumer online, conducting payment online, and enjoying the local living services offline [1]. Most of the individual service industry might adopt this pattern, such as restaurant, hotel, airline, tourism, entertainment. The purchasing of goods could also adopt this pattern, i.e., consumer purchase online, pick up goods offline. Another pattern could be called offline to online, i.e., consumer visit show store, payment via scanning QR code by smart phone, and wait for delivery of the products, which could also be done in subway station, bus, or any other pop-up advertisements.

O2O commerce differs greatly from the concepts of B2C, ROPO, Brick and Click in many aspects. O2O commerce adopts an integrated channel of online with offline, focus on consumer participation and physical experience. In traditional B2C pattern, people order a product and pay for it online, and then wait for delivery, which remove the physical experience from the purchase process. As for ROPO, consumer just research the product online, in fact he or she does not really take part in the process of ordering and payment online, which is very similar with the pattern of traditional brick and mortar. Brisk and click generally refers to merchant's multi-channels including offline and online channels, which allows consumer purchase online and wait for delivery or shop in real stores. Some chain stores also allow their customers to pick up the online orders at nearest physical store. Therefore, the concept of brick and click is larger than O2O concept.

According to the above discussion, we define O2O commerce in this article as online to offline or offline to online commerce pattern by which a merchant integrates online and offline presences into a seamless channel, which allows consumer take advantage of both online information, convenience, lower price, etc. and offline physical experience and customer services.

2.2 Adoption of innovation theories and models

The research on innovation adoption may be classified three categories, namely psychology-based theories, technology acceptance theories, and economics-based theories.

Psychology-based theories about behavior establish the foundation for the study on innovation adoption. Fishbein and Ajzen developed the theory of reasoned action (TRA) that indicates behavior intention is determined by attitude and subjective norm [3]. Thereafter, Ajzen proposed the theory of planned behavior (TPB) incorporating the third construct, perceived behavior control, into TRA [4]. Rogers established innovation diffusion theory (IDT) based on social psychology, which explains the innovation adoption process of groups and individuals [5].

Technology acceptance theories are most popular used in the studies on innovation adoption. Most famous theory may be technology acceptance model (TAM), created by Davis [6]. After that, many studies on innovation adoption are based on TAM [7, 8]. Goodhue and Thompson developed task-technology fit theory (TTF) to explain the impact of the fit of technology and task on performance in an organization [9]. Additionally, Venkatesh and Morris et al. proposed the unified theory of acceptance and use of technology (UTAUT) after a review of the models of technology acceptance [10].

Economics-based theories relevant to innovation adoption include prospect theory, network externality theory, perceived value theory, etc. Prospect theory provides another foundation to explain consumer's decisions under uncertainty [11]. Network externality theory indicates that the value of the product or service might be influenced by the number of other buyers [12] [13]. Wood and Scheer incorporated the constructs of benefit, monetary cost, and perceived risk into perceived value model (PVM) to explain consumer's purchase decision [14].

In order overcome the shortcomings of single theory, many studies integrated two or more theories into one model to investigate innovation adoptions. In this way, researchers are trying to more comprehensively explain

the innovation adoption process in various contexts.

3. THEORIES AND HYPOTHESES

In our study, consumers in O2O commerce have to consider both the attractiveness of the information technology and the economics of the adoption of the pattern. Therefore, our theory will be constructed based on the features of O2O commerce, technology factors, and economics factors. The driving desire for O2O pattern is that it may take advantage of both online and offline commerce. The features of rich physical experience and ubiquitous interaction between online and offline could meet the demand. In addition, from the perspective of consumer in O2O commerce, the classical constructs of TAM, i.e., "perceived usefulness" and "ease of use" may be still of great significance to their adoption behavior. Since consumer has to undertake all consequences of adoption O2O commerce, they must evaluate economic variables, such as benefit, cost, and risk resulting from the adoption decision, thus we also incorporate perceived value theory into our theory. The research model is presented in Figure 1.
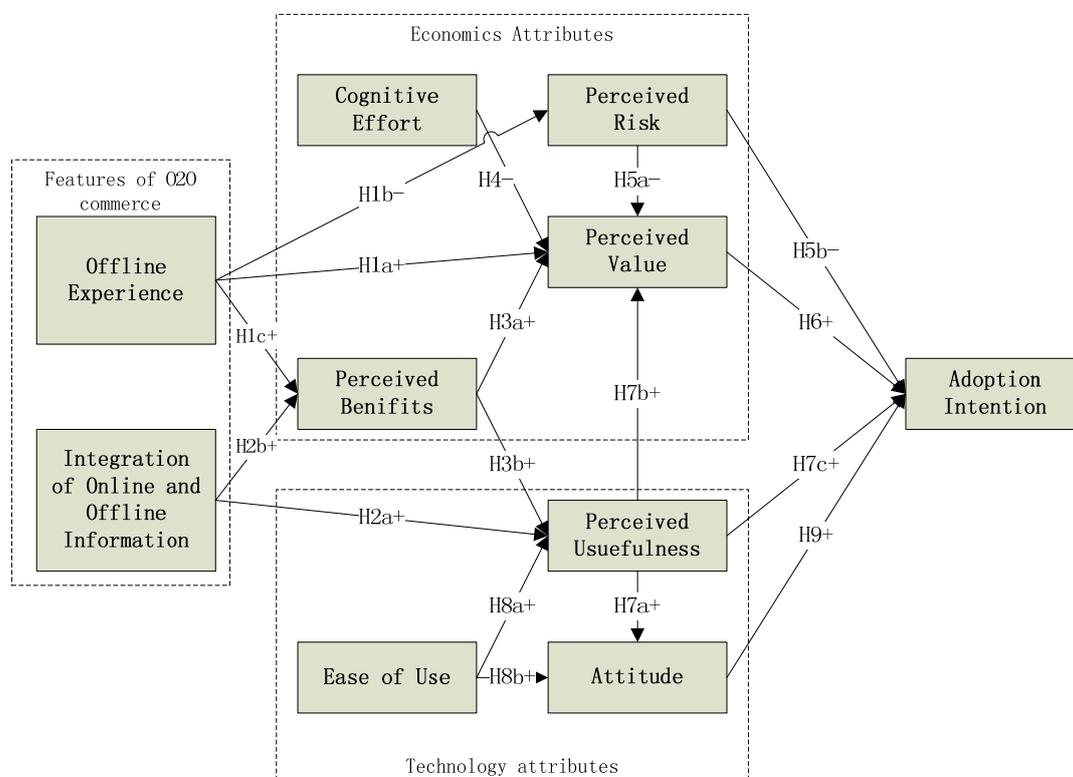

Figure 1. Theory Model

3.1 Features of O2O commerce

3.1.1 Consumer offline experience

Compared with pure online commerce, O2O pattern may make difference in allowing customers to have great physical experience in real stores while keeping the advantages of online commerce, such as great convenience, high efficiency. In this study, the construct of "consumer offline experience" refers to personal experience on both goods and services in real stores, such as examining or trying on a good, involvement in a service.

One of the salient problems of online shopping is that consumers are not able to have a try before ordering. Without physical tactility, consumer gets information about the goods just through browsing webpage or communicate with online sales assistants in traditional e-commerce. This always leads to consumer's concern about the quality, texture, size, etc. Sometimes, shopping online could be a disappointed experience just because the good received is not as consumer desired. Online retailers could establish showrooms for their products to

increase consumer physical experience, which would improve their understanding about the products and encourage online purchase subsequently. As for a service purchased online, consumer engagement is indispensible for service fulfillment, thus consumer experience will be more important for their future buying. Offline experience provides consumer with real tactility in e-commerce, which may greatly improve consumer's perception about the value of O2O pattern.

Obviously, offline experience could lower the information asymmetry between merchants and buyers in O2O commerce, thus offline experience is inferred to ease consumer perceived risk in O2O commerce.

Therefore, we propose the hypotheses as follows.

H1a: Offline experience is positively related with perceived value in O2O commerce;

H1b: Offline experience is negatively related with perceived risk in O2O commerce.

3.1.2 The integration of online and offline information

The integration of online and offline information (IOOI) plays a crucial role in bridging online and offline business. IOOI refers to the extent to which the merchant's online database keeps consistent information with offline stores simultaneously, the offline consumption information could be easily checked and confirmed, and customers could conveniently switch from online to offline [19].

Consumer can access the webpage of the product being browsed in store via smart phone by scanning QR bars, NFC zones, or mobile apps, by which consumer may get to know the information about the quality, features, inventory, other's reviews, etc., and pay for it if deciding to buy. Online order information could be verified by salesman in real store, which will facilitate picking up the goods bought online or service consumption in hotel, restaurant, spas, etc.

IOOI is the unique feature of O2O commerce, which solves the problem of the information communication of online platforms and offline stores. From the consumer perspective, O2O commerce differs from brick-and-mortar in the availability of seamless integration of online and offline, which allows them to glide between online and offline freely and conveniently. Therefore, IOOI provides substantial usefulness for consumers. Consequently, we hypothesize that:

H2a: IOOI is positively related with perceived usefulness of O2O commerce

H2b: IOOI is positively related with perceived benifits of O2O commerce

3.2 Economics attributes of O2O commerce

3.2.1 Perceived benefit

In our study, perceived benefits refer to consumer's perceptions of what could be received in O2O commerce. One of the most important purpose of O2O operation for merchants is to take advantage of both online and offline commerce, by which consumer can also benefit from online and offline presence of retailers. Online benefits include ubiquitous convenience of ordering, seamless access of online information of products and comments, attractive price discounts, and so on. Whereas for offline benefits, consumer may examine the goods by themselves, feel the texture tactility, or pick up the goods in real stores. Of course, they can also consume an offline service if the purchase item is a service.

Perceived value theory indicates that perceived benefit has a positive influence on perceived value [14], some present researches also validated that theory in the domain of mobile commerce[15-17]. However, little empirical evidence was found about the relationship in O2O commerce context, therefore, we propose the hypothesis:

H3a: Consumer's perceived benefit is positively related with perceived value in O2O commerce.

In addition, these benefits of O2O commerce definitely solve some problems in consumer buying process. For example, instantly accessing the webpage of the product browsing in the store will provide plenty useful information for consumer, such as price, other's reviews, online sales data, which improve the efficiency of

consumer's purchase. Physical experience enhances consumer's tactility of the products, which may help consumer select the desired products. Hence, we hypothesize that:

H3b: Consumer's perceived benefit is positively related with perceived usefulness of O2O commerce.

3.2.2 Perceived sacrifice

Sacrifice that consumer undertaken in O2O commerce consists of monetary cost and nonmonetary cost. As for the former, since most of O2O commerce adopters are smart phone user, and the mobile communication network fee has been paid, as such, the adoption of O2O will not lead to additional monetary cost, i.e., marginal cost for consumer. Reference [17] has also validated that consumer's perceived monetary cost does not influence perceived value significantly in mobile payment service. Therefore, we mainly focus on the nonmonetary cost for consumer. Prior literature indicates nonmonetary cost consists of cognitive effort and perceived risk [14, 16].

Cognitive effort refers to the effort put into understanding the process of O2O commerce and learning how to operate the application system, which could be regard as the effort cost for consumer. Generally, consumers are not familiar with O2O pattern firstly, especially when using the interaction technology in the real store. Cognitive effort was verified as a negative predictor of perceived value of mobile channel usage [16]. In order to examine the impact of consumer's perception about cognitive effort on perceived value in O2O commerce, we hypothesize that:

H4: Cognitive effort is negatively related with perceived value in O2O commerce.

Perceived risk is another nonmonetary cost factor of O2O pattern adoption. Perceived risk, as a main hindering factor, has been widely reported to have negative influences on innovation adoption in online banking, mobile services, e-services, mobile payment, etc.[20-23]. Yang and Zhang et al. suggested that perceived risk exert adverse influences on both perceived value and adoption indention of mobile payment service [17], which is also consistent with the finding of Wood and Scheer [14].

In our study, perceived risk is defined as consumer's perception about the possible losses due to the adoption of O2O commerce [20, 24-26]. Offline physical experience may lower the perceived risk level, whereas perceived risk resulting from perceived technology and regulatory uncertainty still make sense in O2O pattern. Consumer may encounter privacy exposure, payment mistake, etc., which will definitely lead to losses to them. In addition, according to prospect theory, consumers are more sensitive to losses than gains [11], thus perceived risk may also have a direct impact on adoption intention of O2O pattern.

Therefore, we propose the following hypotheses:

H5a: Consumer's perceived risk is negatively related with perceived value in O2O commerce.

H5b: Consumer's perceived risk is negatively related with the adoption intention of O2O commerce.

3.2.3 Perceived value

According to prospect theory and perceived value theory, consumer's subjective perception on the value of a good or service is the main determinative factor in their buying decisions [11, 14]. Perceived value is defined as consumer's personal assessment of all benefits (gains) and sacrifices (losses) resulting from the adoption of O2O commerce [14, 15]. Prior studies have also verified the positive influences of perceived value on the adoption of mobile service adoption [15, 17]. Reference [16] certified that perceived value of mobile channel positively relates with the use intention of it.

Therefore, in order to examine the similar relationship between perceived value and adoption intention in O2O commerce, we extend the research into this study by exploring the hypothesis:

H6: Consumer's perceived value is positively related with adoption intention of O2O commerce.

3.3 Perceived technology attributes

It is evident that consumer in O2O commerce is also a new technology user, thus it is also necessary and

viable to examine the technology attributes' impacts on consumer adoption. We use the constructs of TAM, i.e., perceived usefulness, perceived ease of use, and attitude to test consumer's perception about O2O information system.

According to TAM, user attitude to IT depends on the cognitive beliefs of perceived usefulness and perceived ease of use, while intention is determined by attitude [6]. Additionally, perceived usefulness also exert influence on acceptance intention directly, and perceived ease of use has an impact on perceived usefulness as well [6]. Perceived usefulness is defined as the extent by which the user perceives that acceptance of a technology system would improve the job performance, and perceived ease of use is defined as the extent by which the user perceives that using a technology system would ease the effort.

In our study, consumer adoption of O2O pattern may enable them to purchase the goods online in real store at the moment when there is a need. It will also be helpful for consumer to buy a desired product from online store through an online experience. Note that it is important to make the O2O system easier to learn and use, which may exert influences on both perceive usefulness and attitude to the system.

Additionally, Kim and Chan et al. regarded perceived usefulness as a component of benefit [17], while we take it a little bit differently. However, higher perceived usefulness of O2O may also improve consumer's perceived value of O2O commerce. Based on above discussion, we made following hypotheses:

H7a-c: Perceived usefulness is positively related with attitude, perceived value, and adoption intention respectively.

H8a-b: Perceived ease of use is positively related with perceived usefulness and attitude respectively.

H9: Consumer's attitude is positively related with adoption intention.

4. METHODOLOGY

The measurement scale is drawn from prior validated instruments. Most of the measures of the constructs were either adopted or adapted from previous literature. The measures of perceived usefulness and perceived ease of use were adapted from reference [6], and attitude was measured with the items from reference [18]. The measures of cognitive effort were adopted from reference [16]. The items used to measure perceived value were taken from reference [15]. We measure the construct of offline experience with the items adapted from reference [28] and reference [29]. Measures of IOOI were adapted from reference [30, 31]. The measures of adoption intention were adapted from reference [32] and reference [27]. Perceived risk and perceived benefit were treated as formative constructs consisting of several sub-dimensions [17, 32].

We collected some data via a survey and then conducted a preliminary analysis.We adopted partial least squares approach to estimate the reliability and validity of our measurement scale and to test the hypothesis. It is suggested that the reliability of scales is acceptable, convergent and discriminative validity is also satisfactorily met. Hypothesis test indicated that the core hypotheses were supported including H1a-c and H2a-b. In addition, H3a-b, H4, H6, H7a, H8a-b, and H9 were supported, but H5a-b, H7b, and H7c were not supported. Most of the expirical test results are consistent with our theory hypotheses, and more interesting discussion will be conducted in future study.

5. CONCLUSIONS

Two features of O2O commerce are found to have significant influences on consumer perceptions of both economics and technology attributes of O2O commerce based on perceived value theory and TAM, which is the main theoretical contribution of this article. Consumer offline experience and the integration of online and offline information were firstly introduced to explain consumer adoption behavior empirically.

Secondly, both economics features and technological features were incorporated into the research model to

explain dual roles of both a service user and a technology accepter of a consumer in O2O commerce adoption.

The findings also provide some important practical insights for businesses and managers. To a large extent, the success of O2O commerce depends on enriched consumer experience and pervasive information integration between online and offline environment.

In the process of experiencing, consumer could be easily swift from online to offline. Online ordering information should be easily, conveniently, and effectively confirmed by merchants. The identity of consumers should also be recognized effectively in stores. The inventory information, or service capability and status should be simultaneous with online system. Consumer's offline experience could be easily posted online. In-store consumers could also get other consumer's online comments and sales recordings in a real-time way. Additionally, once an order is generated in merchant's online system, it should be responded timely.

Owing to the limitation of the length of the paper, the more details of the research will be included in completed paper, e.g., sampling process, data processing, measures description, and so on. Especially, some fundamental findings of the research will be explained in future studies.

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