

Innovations in the Application of E-services in the Perspective of Dual-channel Integration

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Abstract

The rapid development of information technology and e-commerce has been gradually changing people's consuming habits and lifestyles. As e-services have extensive applications, the e-service platform has become an effective way to deliver services. In order to cater to different demands of consumers, enterprises have established the online channel and integrated it with the traditional channel. Improving the integration quality between these channels requires coordination between online and offline activities, including online e-services and offline experiences. In this paper, we attempt to explore, on the basis of the two-channel integration theory, the innovation in the application of e-services during the process of channel integration and some key issues in the dual-channel integration. The innovation redefines the main role of e-services, the e-service platform system, and the content of e-services.

Keywords: *E-service, Dual-channel, Integration, Innovation in application.*

1. Introduction

With continuous development of the Internet and popularization of mobile terminals, people's lifestyle and consuming habits has undergone tremendous changes. According to the *Statistical Report on Internet Development in China (July 2014)* [1], the online shopping population had reached 332 million, which accounted for 52.5% of the total netizen and an increase of 3.6% compared to the previous year. Among these, mobile phone payment users increased from 25.1% to 38.9%. Mobile payment has expanded its applications to more and more occasions in daily consumption activities. Under the pressure of continued growth of the online market, many traditional retail channels also start to open up online sales channels and try to meet the spending habits of today's consumers with both channels. As a result, new e-commerce modes such as Online-to-Offline (O2O) start to emerge. These new modes of e-commerce attempt to integrate the strengths of both online and offline channels. For example, the disadvantages of the offline store experience might be reversed by taking advantage of the online functions of information collection and payment convenience.

While the Internet has changed people's habits in life, it has also exerted a subtle influence on their demands for commodities. As a side product of commodity, services have also gained new content and form in the digital age. E-service is a necessity in the era of network economy and the inevitable trend as well for the development of enterprises. E-service is supported by technology and is executed by customers as a self-service via interactive interfaces. For example, online banking, which was started in the United States, has gained much popularity nowadays in China as many banks have launched online payment services. Information service is one of the main components of e-services. Currently, Location-based Service (LBS) technology has been widely used in various kinds of mobile phone software, most commonly in Apps from group-buying websites, such as *DaZhong DianPing*, *MeiTuan*, and *NuoMiTuan*. It mainly relies on the

Global Positioning System (GPS) or mobile communication networks to obtain the location information of end users, and with the support from the Geographic Information System (GIS) platform, provides local service information to the users.

Based on the network environment, certain industries have shifted from traditional physical services to e-services, and gradually occupied a dominant position. During the process of dual-channel (online and offline) integration, they have changed the methods and contents of services in order to meet the different needs of consumers. In this article, we aim to analyze the application of e-services in the online and offline integration and use the O2O model as an example to discuss innovations in this application.

2. Theoretical Background

2.1 Connotation and Attributes of e-services

Information technology (IT) brings in the advantage of convenience and quickness, which helps save the operation costs and expand the scope of customers' usage. The direct feedback of information via interactive interface brings service providers and customers closer, thus makes it easier to meet personalized needs of individual customers. E-service, also known as online service, is a vague concept that has not gained a unified understanding thus far. Different scholars view e-service from different angles and each gives one's own definition. For example, Hassan defined e-service as a process during which service and/or manufacturing companies provide customers with value-added services (VAS) that are mediated by electronic networks [2]. However, Rust recognized e-services from four aspects: (1) Information services under digital environment, which make use of a variety of information resources by integrating them under digital environment. (2) Electronic services in specific fields, such as government e-services, with which government agencies use information technology to provide all-round, all-day government services to the society. E-commerce is another field for such services, which use the Internet as a medium to create a means to provide services and to manage enterprises. (3) Information technology-driven services, which emphasize the importance of electronic media in the process of delivering and acquiring services. (4) Generalized e-services, mainly some IT organizations who make services their central focus of marketing and provide personalized and open services using the open service module of network [3]. In this kind of views, the process of services is considered as a coexistence of the virtualized and the materialized.

Moreover, some scholars adopt full virtualization and discuss e-services from three aspects, namely sites, channels and goods. In the context of the Internet, companies do not need physical stores; instead, online data updates and remote services are the typical example of fully virtualized sites and channels that convey services. This is similar to the marketing model of DELL, which sells products through network, distributes products and installs auxiliaries using entitative logistics channels, and updates programs and software using virtual channels. Hass and Brown put forward that the purpose of e-services is to use network as the medium to achieve cross talk between the information from all sites, which are in the form of virtual interface [4]. Riedl, et al., consider e-services the intersection of economic transactions and network services, which takes value exchange and technical implementation as the core [5]. Under this perspective, e-services follow the commodity dominant logic (CDL), in which services are considered the supplementary products that improves the value of goods [6].

The particularity of network environment requires that companies integrate goods and services to enhance their competitiveness. This is the service dominant logic (SDL), according to which the emphasis is shifted from the exchange value of goods into their use value, and the process of services receives more attention while customers also play

an important role in creating values and in integrating resources. Under the service dominant logic, e-service is a collaborative value-creating process. In order to improve the adaptability and durability of the entire service ecosystem, customers and service providers share and jointly integrate resources. It brings together a set of digital solutions through mutual interactions between the virtual sites and channels [7].

In summary, the content of electronic services includes a few points in common, despite the fact that scholars elaborate e-services from different angles. For example, transmission of e-services requires the Internet environment to provide services, digital technologies as a support, and a virtual interface for information interaction.

E-services exhibit the following attributes and features: (1) Low delivery costs. The input costs for e-services are usually related to service design and infrastructure construction, while the costs for delivering services could be very low or even zero [8]. Thanks to the convenience of the network environment, customers are able to meet their service proposition in a short period of time on virtual sites, resulting in significant savings in costs in searching and negotiation. Virtual channels convey digitized proposals to customers without the need of physical transfer and hence save logistics costs. Nowadays, network platforms are bound to various payment platforms, which enable direct payment methods and reduce transaction costs. (2) Convenient and transparent information feedback. Because the service requests and personal information posted on virtual sites by customers are open and transparent, they give a direction for e-service providers to supply personalized service and help enhance the quality and efficiency of services. The evaluation information from customers gives e-service providers the basis for improving services and adjusting strategies, and also gives other users suggestions on using these services. (3) Strong availability. E-service offers high availability which gives rise to a diverse and changeable customer base. As a result e-service providers must constantly innovate and pay close attention to the upgrade cycle and the progress in development to maintain a competitive advantage in order to keep a stable customer base and reduce the possibility of being imitated by competitors. (4) High degrees of outsourcing. In the process e-service delivery, customers only need to order their request for service experience at a virtual site (reception) to obtain services via virtual channels. Therefore, e-service providers could obtain the contents of a service and subsequently deliver it to customers by integrating and making use of resources through worldwide outsourcing. Actually, the advance in information technology and improvement in compatibility have created favorable conditions for effective integration of e-service outsourcing.

2.2 Dual-channel (Online and Offline) Integration – the O2O Model

The Internet era is featured with fast pace, short distance, and no boundaries, which promote the development of e-commerce, innovations in enterprises, and transition of consumption patterns. The e-commerce environment has gradually matured in China. B2C, B2B, C2C have become well known and widely used. Many major e-commerce platforms have gained advantages in their own areas. For example, Tmall specializes in quality assured daily necessities and clothing, whereas JD focuses on home appliance and electronics, and JuMei is known for discounted cosmetics and beauty products. Traditional store businesses require great costs in labor and rent, and the sales are limited by time, location, and weather. E-commerce, however, uses the network platform and breaks the geographical boundaries, making space a vague concept. By clicking the mouse, merchandises from different regions could become available easily and quickly. Online virtual enterprises effectively reduce the costs for businesses in store renting, facility expenses, and operations. However, e-commerce is not perfect. For example, it lacks the function of the on-site shopping experience offered by entitative stores. Besides,

the business range of e-commerce is limited to some extent, as certain merchandises cannot be distributed. Moreover, credibility issues of operators may arise due to an imperfect logistics system in China. Last but not least, invariable patterns of e-commerce and intense or even deteriorate price competition may result in difficulties in gaining profit.

The rapid growth in electronic commerce stimulates industrial revolution, and the channels become the advantageous and key issue in competition. In the traditional business model, merchandises are displayed in physical stores, which provide consumers with a space and environment to shop autonomously. E-commerce, however, has changed the lifestyle of people thanks to the borderless and convenient nature of the Internet. The sales of goods deviate far from people's original track of view on sales; instead, merchandises are presented in the form of pictures or videos on the Internet. Furthermore, people's assessment regarding their shopping experiences serves not only as an informational source for other consumers, but also as a reference for the commodities and for the online stores. Eventually, the point-to-point shopping channels are realized in the form of logistics. Due to the difference in consumption patterns and preferences, people choose their consumption mode between entities and network, which fundamentally is just a difference in style. The advantages of traditional channels is unquestionable with goods displayed in physical stores for a series of experiential activities such as vision, touch, hearing, taste, etc, whereas virtual stores on the Internet are intrinsically deficient in these areas.

The online-to-offline and offline-to-online model (O2O) is the most common dual-channel integration. The former relies on information dissemination and visual experience of network platforms and attracts consumers to experience through effective interactions with online media and social platforms. Commonly known online-to-offline examples include group-buying sites and specialized hotel reservation sites. The latter makes use of activities in entitative stores where consumers are trained to establish the consumption habit of using online payment methods for convenience. For example, shopping malls promote the use of swipecable two-dimensional codes so that one can quickly make payments.

As a new e-commerce mode, online-to-offline embodies the dual-channel integration between online and offline in the downstream of the supply chain. With its unique features, online-to-offline continues to scale up in the Chinese market. Online-to-offline was developed from either traditional entity business based on physical stores or traditional e-commerce mode that relies on logistics for network sales. To complement the online and offline resources and advantages, O2O employs the Internet for online marketing, adopts online payment methods, and guides customers to participate in offline store experiential activities. Compared to other modes of e-commerce, the main feature of the online-to-offline model is that there must exist a physical store, and the offline experiential activities are emphasized; only the information flow and capital flows are online. The intrinsic nature of online-to-offline is entity economy, and to be more specific, the further development of digital entity economy. For online trades via the Internet platform, the detailed information of each transaction can be effectively recorded, and the effectiveness in marketing can be monitored by analyzing the data. The Internet has overcome geographic limits and has gained massive numbers of users, and thus has created unlimited business opportunities for the online-to-offline model. Online transactions could facilitate the analysis of consumers' habits and make statistical analysis easier. Besides, services could be improved by tracking the online evaluation information left on the platform by customers. Network makes it convenient to improve the efficiency of information exchange and to reduce the costs in transactions. The O2O model enables users to experience real personal services, to save costs in transactions and logistics, and by taking advantage of the information classification on the platform, to facilitate the

screening process for quicker and more effective decisions, thus to cut down the selection time.

3. The Current Situation and Problems of e-services

3.1 The Application of e-services in Online-to-offline

Online-to-offline has undergone a multiphase development, from the prototype of the service market, to its official formation upon the unity of network and entities, and to the current expansion of the meal reservation and car rental services. With its unique advantages, the O2O model has been widely applied in many areas, such as online travel, real estate, ticket booking, mobile Internet, catering, car rental, e-coupons, and luxury products. HC Research (HCR) conducted a survey in 50 cities on consumers' behavior and their acceptance of three categories of products, including fast-moving consumer goods (FMCG), home appliance/IT/electronics, and automobile. The survey found that the main reasons for online purchase and offline experience are the lower costs, convenient purchase, and time saving [9]. The major range in which the O2O model has been applied includes tangible products that are not suitable for fast delivery using traditional logistics in e-commerce, such as franchise chain enterprises, chain catering company, and local life service enterprises. The implementation of the whole O2O model requires the formation of a complete ecosystem by all the participants, i.e. the online platform, brands, channels, stores (offline shopping malls), service personnel, and third-party operators. Online platforms are the platform for electronic service, which provides the online interactive interface for consumers to compare information and to make decisions according to their own consumption demands, making online shopping a self-service process.

Doerr proposed the concept of “*SoLoMo*”, i.e. Social, Local and Mobile. Online-to-offline is perhaps the best interpretation of this concept. The main connotation of e-services is information interaction via a virtual interface. Today, social networking sites have become a part of people's daily life and communication. In addition, the conveniently available mobile Internet and the popularization of smart phones have dramatically facilitated information gathering for users. Many merchants provide smart phone Apps, games, videos, etc. for customers to experience, which helps attain good results of interactive marketing. From two perspectives, Fassnacht and Koese divided e-services into four categories [10]. One of the four includes independent services provided through other means, e.g. GPS locating services. Personalized service is an inevitable trend towards the changes requested by consumers. With LBS technology, the online platform of the SoLoMo-based O2O model could refine and classify the needs of users based on their service demand and choice, and propose targeted and personalized service plans. Online payment is one of the online banking services and has gained wide popularity, as it has become a convenient type of consumption using mobile phone terminal software to pay by scanning codes. The core of online-to-offline is online payment and offline experience, and therefore the service experience occurs in a defined geographical location. In other words, one makes payment online while experiencing services in a designated location, which actually reflects localization.

3.2 The Key Problems of e-service Implementation in Online-to-offline

(1) Synergy between online and offline channels. Electronic service is a value-adding process, which exploits the convenience of network to exchange the information and contents of services. E-services avoid the inherited cumbersomeness and inefficiency of traditional services, make information more transparent, and are easily available. The

O2O model emphasizes the importance of offline experience and the feasibility of online information collection and online payments; it is therefore a cooperative process of both the online and offline activities. Recently, many scholars have studied on the mechanism that generates the synergy in the process of integration between online and offline channels. For example, some analyzed the importance of synergy when consumers try to make a purchase decision among the multiple channels of a merchant, while others studied the pros and cons of retailers attempting to coordinate different channels [11-16]. The ultimate goal for retailers to adopt a multi-channel strategy is to better satisfy the different buying motivations of consumers. Providing more choices of channels may help create healthy competition, increase the customer base, and improve their loyalty [17]. It would be ideal if the integration improves the performance of all channels. In this case, the accumulation of the diversity and prolificacy of channels results in a strengthening effect [18]. The first step in creating a consumer-centered multi-channel system is simultaneous usage; however, the synergy of different channels in a multi-channel system is more important than in parallel retail [19]. Limited cooperation, competition, conflicts, or a lack of coordination between different channels will all cause confusion to customers [12,20]. Conflicts may arise if traditional retailers add online channels, e.g. one channel may cause a cannibalization effect to another [12]. Multi-channel retailers, however, might be able to realize synergy by sharing the infrastructure, markets, management, and customer base of different channels [21].

(2) Information integration. The e-service platform provides an interactive community where customers could easily search and compare information. Accurate information such as the region, commercial area, type, and evaluation of a service is immediately accessible to consumers through information gathering and dissemination on the information platform. Berman, et al., believe that a good strategy for multi-channel integration is featured with the following characteristics: highly integrated promotions, equal cross-channel product supplies, an integrated information system with a shared customer base, cross-channel pricing and inventory information, service process of online purchase and offline delivery/pickup, multi-channel searching opportunities for suitable customer groups [22]. Risks accompanied by experiencing marketing in O2O include credibility issues, a lack of industrial standards, and a stereotyped development model. Credibility issues are the most obvious O2O problem that concerns customers the most. Credibility issues arise from the uniqueness of the O2O model, which tends to lead to information asymmetry between the on-line and off-line channels, resulting in distortions in product information during the transmission process. Once the quality of the products is lower than the expectations customers obtained from the information platform, or if customers are not satisfied with the service attitude, consumer advocacy will arise for rights protection. The credibility of the platform is a major factor that encourages users to trust merchants. Sufficient credibility not only guarantees the genuineness and quality of goods, but also ensures smooth cash flow of trades.

(3) Adhesiveness of users. The main problems that restrict the development of O2O are plain profit model, unclear orientation, excessive growth, and a lack of adhesiveness. Needless to say, there is still larger development space for O2O; however, instead of fanatically investing in O2O, one should carefully take into account the characteristics of a given business, find a reasonable and clear orientation, wisely enter the O2O market with advantages complemented, and refuse sameness in development model. The main purpose of model innovation is for promoting the common interests of both online and offline channels, for improving adhesiveness of consumers, and for better spreading of the O2O model. The capacity of entity enterprises is the guarantee for the cash flow to run smoothly, an essential element for branding, and the determinant factor for improving the adhesiveness of consumers. The more competent an enterprise is, the more effectively it is able to operate its e-commerce platform and to reduce the risks in providing e-services,

and the better environment it is capable of creating for users to experience, thus ensuring it to meet customers' expectations in service and to enhance its credibility. During the actual operation of the O2O model, merchants should focus on the specific operational procedures of the e-service platform, establish a good reputation for this platform by exploiting the open nature of network, enhance the brand name effect, and improve the adhesiveness of users. In addition, e-service platforms must strictly control the qualification of merchants to ensure the interests of consumers, and on the other hand they must also guarantee the shared credibility of both the merchants and the e-service platforms, thus improving the loyalty of customers.

4. Innovations in the Application of e-services

4.1 The Roles of e-service Entities and their Responsibilities on Innovation

In general, e-service entities are the objective target that provides electronic services. In the O2O model, the e-service entity is a dual-channel enterprise who operates online and offline simultaneously. The major feature of this type of enterprises is that they do not adopt solely a network channel. Therefore e-service is actually a part of the service content of enterprises and it complements the entity service of the respective enterprises. E-services cannot completely replace the traditional services. In order to meet different consumption habits and consumption patterns of customers, enterprises optimize the collaboration mechanisms of e-services and traditional services to maximize respective advantages of both channels. The innovation of the e-service entity is reflected more by the operation modes and strategies enterprises adopt. In reality, e-services are in close contact with the offline activities of enterprises during the process of e-service operations. It is impossible for enterprises to complete all the activities relying solely on online services.

In order to solve the problem of synergy between the online and offline channels, it is necessary to make decisions and to coordinate based on various aspects because the roles and responsibilities of the e-service subject will change. Yan [23,24] and Yan et al. [25] expounded from three aspects (i.e. advertising, price, and brand) on the importance of the organizational structure and the coordination between channels, in comparison with the independent operations of individual channels. The core element of the O2O model is the high degree of unity of the product price, quality, service, and brand strategy between its online and offline channels [26]. Yan argues that when using multiple channels, the competition among channels may lead to a reduction in the interest of traditional channels, which could trigger a "price war" among channels [27]. Therefore, it is particularly important to reduce the competition and to improve the coordination among channels. Electronic service platform is a virtual interactive platform for information integration. If the platform fails to strictly control the credibility of merchants, it will cause a loss of benefits to consumers, resulting in asymmetry of both service information and service quality between the online and offline channels.

As the subject of e-services, enterprises are responsible for gathering as much information of merchants and categorize the credit rating of merchants in detail in order to provide useful information to consumers. The pros and cons of coordinating the variables of multi-channel markets are reflected by the fact that its function of guiding customers on channels is positively correlated not only with the overall loyalty of customers, but also with the cannibalization effect of channels. As a result, the e-service subject in the O2O model should analyze the pros and cons of integration variables in detail and develop strategies to ensure synchronized, healthy, and stable development between the online and offline channels.

4.2 Innovation of the e-services Platform

The e-service platform requires a perfect information analysis system, including an online and offline price decision module, a merchant credit rating module, a service feedback module, and a customer information module.

The price decision module provides a convenient service for consumers to search for information. The biggest highlight that attracts consumers to pay online and to experience offline is the relatively favorable price.

When merchants lay down strategies, they need to weight as to which price strategy ensures the interests of both the online and offline channels while the overall profit is improved accordingly. Through data analysis, Chu, et al. noted that the online shopping frequency was positively correlated with the sensitivity of commodity prices^[28]. Prices online are relatively concentrated compared with those offline. Network media facilitate price searching for consumers, whereas the costs of offline searching for price information are much higher. Apparently, low searching costs for price information help improve the price sensitivity. E-service platforms are able to quickly sort the prices of the same goods from different regions or different goods from the same region through massive databases and computer algorithms. The designing of the web browser interface enables consumers to quickly find their service needs. This reduces search costs for consumers and further improves the adhesiveness of customers attributed to price sensitivity.

Merchant credit rating module is to protect the interests of consumers and the reputation of the platform. A sound management system can effectively coordinate and restrict the offline merchants. Unfortunately, e-service platforms merely play a third-party role at the current stage, while merchants all have their own rules and regulations. In a multilateral market environment, today's merchants are unable to achieve a win-win situation as they fail to consider each other's interests at decision-making moments. Taking advantage of its coordination and sharing mechanisms, e-service platforms could certainly make selections among merchants according to their credit ratings and the feedback information from customers, thus assuring online and offline information symmetry, reducing customers' losses, and enhancing the brand name of platforms.

The service feedback module is one of the bases for rating the credibility of merchants in e-service platforms. It also provides an effective way for e-service platforms to be aware of inadequacies in servicing customers. With innovative customer forums and communication communities, e-service platforms provide a platform not only for customers to exchange information, but also for merchants to effectively dig out new business opportunities. Besides, the problems reported by customers are the basis for the platforms to effectively enhance service quality.

The customer personal information module is a useful source of data collection and statistics for e-service platforms. Through the virtual interactive interface, e-service platforms can quickly and accurately collect the browsing history of users, and by analyzing the contents they browsed, figure out their needs and consuming categories they belong to. The platforms can make suggestions on specific service contents to customers in accordance with their personal consumption habits and styles. They can also provide data support for the development of regional business circle through statistical analysis of the consumption information in specific geographical areas.

4.3 Innovation in e-service Contents

E-services should focus on establishing the brand names of enterprises in the process of providing services, and ensuring consistent brand image of both the online and offline channels. The management and operation of an electronic service platform represents the comprehensive strength of the enterprise, and is a concrete manifestation of the quality of

online and offline integration. Good operational performance of an e-service platform forms the foundation of its reputation and credibility, which constitutes a part of its brand name. Brand is the symbol of the enterprise strength. A good brand image gives customers a sense of trust and quality, and is therefore an effective way to improve customer adhesiveness and brand loyalty.

The brand value of an enterprise is a promise made by the organization and a guarantee of credibility. Klaus believes that brands provide better values to customers [29]. Danaher, et al. discovered that online brand stores with a higher market share have the advantage of brand loyalty, whereas those with a lower market share have higher offline brand loyalty [30]. Kwon and Lennon proposed that offline brands have a significant impact on online brands when the interplays between the two were viewed. In the course of an online consumption experience, a positive impression on a brand encourages customers to perceive its online brand image [31]. Seamless integration of the online and offline channels effectively enriches the activities of consumers in experiencing retailers, strengthen the brand images of retailers, and improve the loyalty of customers [32-35].

The virtual interface of e-services provides the opportunity of participation to consumers, stimulates consumers' passion for participation, and elevates the emotional appeal among customers. As far as the channel selection process is concerned, scholars with a convenience-oriented view think that typical traditional channels are characterized by limitations in time and efforts in shopping [36,37]. Although the network channels can convert these features to advantages, it lacks the emotional appeal and the possibility of on-site serving unique to traditional physical stores. Nonetheless, virtual network communities even encourage consumers to participate in the design of their webpage, which could further enhance the emotional appeal of consumers, as they would be using the service contents designed from their own perspective.

Seamless fusion of e-services and entity services enhances the sustainability of the O2O model. In the process of using network channels, service-oriented merchants may cause uncertainties in information search and product display, which is not conducive for consumers to evaluate products and to receive consulting services. Kollmann, et al. suggested that upon decision-making between online and offline, convenience-orientation and risk aversion inspires consumers to choose the online channel while service-orientation motivates consumers to choose the offline channel [38]. Therefore, content design for e-services should aim at reducing customers' perceived risk and paying more attention to bringing convenience to customers. Offline entity services, however, should focus more on orienting services and provide service support face-to-face from the perspective of tactility and sensibility.

5. Summary

E-services are becoming more and more widely applied as e-commerce continues to grow. Dual-channel integration is the trend for the development of enterprises and e-service is a value-creating process. Therefore it is a key issue that enterprises must seriously consider in the process of dual-channel integration as to how to improve the total value of e-services. In this paper, we proposed to make innovations in the roles and responsibilities of the e-service subject, in the e-service platform, and in the content of e-services. From the perspective of these three aspects, we aimed at putting forward better ways, in connection with the specific situation of dual-channel integration in reality, to merge e-services into the process of channel integration and to solve the critical problems in implementing e-services in the O2O model. Further directions of this study concern the quantitative analysis of the relationship between e-services and the integration quality.

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