Building a Digital Value Co-Creation Circle of Service Innovation: The Largest Taxi Fleet in Taiwan

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Abstract. IT rises a digital war in the world and effects the revolution of business model in the firms. The firms need to co-create value with customers in the digital platform to enhance performance to face the competitiveness. The main goal of this study is to discuss the value creation circle in the digital platform and explore the crucial reasons about how can the value creation circle can recycle without seldom investment and budget.

In this study, we use case study as the research method, and chose the Taiwan Taxi corp. as the main object of our research. Then, we also analyze the data base from Google Analytics to improve the quantifiable evidence. We demonstrate two main conclusions, first of all, to create the network externality by the growth members, and the second one is to continue to enhance service quality to added value in the digital platform.

In academic contributions, we first supplement the related research in the digital market studies and renew the content of the value creation. Moreover, we also illustrate a new perspective of the digital value creation circle which is different from the value “chain” concept. It can build up a positive value circulation in the digital platform by network externality and added value.

Introduction

As the digital information technologies (IT) develop dramatically and change the e-commerce business model. The market will not be bounded by the distance in the internet. The competitors come from the whole world and join into the digital war. The situation brings the evolution of the digital content market in network and digitalization technologies, providing various information and services [5]. Because of the features of these burgeoning technologies, the digital content market grows speedily and traditional content providers need to deal with the service transformation decisions [5]. Therefore, information technology plays the critical role and has the potential power to transform industries through the creation of new digital products and services [6]. The managers have to create their advantage and build up the core value in their firms.

The company enhance their entire process to create their products which are changed by information technology and provide to create value for their buyers. The value chain is embedded in value system which is a larger stream of activities in a company [15]. Value chain in a company includes upstream suppliers and downstream clients [17]. They will encourage their customers to become active participants in the design and development of personalized products, services and experiences to co-create value with the firms together, and the cooperation model is an emerging business, marketing and innovation paradigm [10]. Linkages plays a critical role in value chain which connect value activities inside a company and create interdependencies between its value chain and those of its suppliers and channels [15]. IT and Internet are especially playing a relevant role in this area and include radical innovation in their new approach. Therefore, it is a real challenge for traditional industries because of achieving a clear and differentiate product and providing adequate services in order to ensure value and customer fidelity.
However, value, rather than an economic equation, is a multilevel experience that multiple actors interact with each other continuously [3]. Value co-creation is put more emphasize by supplier and the customer who they need to have more interaction in the socioeconomic networks to create value [4, 7]. Furthermore, because the innovation flows and the value elements are non-linearity, the value chain will be illustrated firm activity in network-business environments unfaithfully. To picture the interaction among concentric circles of firm activity is a method to overcome the linearity of the value chain. And it can represent the reality and complexity of relationships that exist in business networks [2].

As the reason, IT rises a digital war in the world and effects the revolution of business model in the firms. The situation changes the interaction between customers and firms. The firms need to co-create value with customers in the digital platform to enhance performance to face the competitiveness. However, most of the researches focus on the discussion of the value chain in organization [3, 11, 15], and there are seldom discussions about the issue of the value concentric circles [2] or value network [4, 7, 10].

The main goal of this study is to discuss the value creation circle in the digital platform and explore the crucial reasons about how can the value creation circle can recycle without seldom investment and budget.

Literature Review

The Development of Service Innovation in the Digital Market

In recent years, IT is a digital convergence that is involved into combine broadcasting, telecommunications and communications into media contents which is evolved from their combination with communications. IT convergence services realize a multitude of ways and forms in news businesses and industries [20]. Firms need to considerate the issue about what they have to deal with when they want to entrance a new digital market, such as investing in new technology and offering related services. Especially, the digital products and services are hard to be protected because of their characteristics of easy-to-obtain and easy-to-duplicate. At the same time, they will also face the attack to the entrenched market in physical goods when consumers change their preferences to convenient digital products. Tangible artifacts decrease their value speedily in the digital content market [5].

The development of ubiquitous networks which the mobile internet combining fixed internet functions and wireless mobile functions is concern about consumers’ various needs and establishes in the intelligence network environment [20]. For the reason, firms need to considerate the following influence of the abovementioned characteristics of technological investment, market differentiation, and uncertain profitability before adopting the new technologies [5].

Theoretical Basis-value Chain

IT-enabled convergence alters the existing market and distribution environment and creates new type of business models. The ongoing development transforms the digital industrial ecosystem [20]. The changing situation happens not only in IT industries but also even in traditional industries. Porter [14] explores a value chain framework to illustrate and analyze the logic of value creation and further consists its central role in the framework to analysis the competitive strengths and weaknesses in firm-level. The value chain analysis can be used to decompose important activities strategically and realize their effects on cost and value. Therefore, the overall value-creating logic of the value chain with its generic kinds of activities is effective in all industries [14, 15].

The innovation value networks usually need any amount of firms to cooperate in complicated relationships. The innovation and production activities break up the boundaries over the firms and nations [1]. The customer, playing the core role in service supply chain, is also the critical factor to make service supply chain different from manufacturing supply chains both in structural and
management methods [18]. Therefore, the firms have to consider about customers’ needs in the
digital platform, and have some marketing activities to create value in the value chain for customers
and the firms.

In sum, value creation is the critical factor to maintain the operation in the digital platform. We
have to build up the value creation each connection in the value chain to become a value creation
circle without other input.

Methods

Study Framework

In the digital platform, customers who are the social members are the essential roles in the digital
network. The network is also connected by the products and service to form a digital platform. The
network forms a digital value creation circle by the four dimensions: digital members, performance,
added value and the platform. Each dimension will create value to a digital value circle to circulate
positively. The research framework shows as Figure 1.

![Figure 1. Digital Value Creation Circle of Service Innovation.](image)

Case Study

We choose Taiwan Taxi Fleet as our case study. It is the largest scale taxi fleet in Taiwan with over
16,000 numbers of the taxis, and the market share reaches to 20%. Their main revenue consists of
several sources: (1) every driver pays the fixed fee of 1,500 dollars to the firm every month; (2) the
driver accepting each call order pays service fee of 10 dollars to the firm; and (3) the other
telecommunication firms and advertising revenue of the car and APP. They build up the Business
Division of the Development of Big Data in March in 2016. Then, we also collect big data from
Google Analytics (GA). As the measurement started at slightly different times, a common period was
selected for the analyses and it covered one year from 1 Jan. to 30 December 2016. The measurement
was continuous with the exception of the business on the digital platform. We collect the data
resources from APP, Telephone voice, called car machine, website and others channels.

In the analysis of the data, we collect the number of new members each month and one year,
successful call numbers, R&D investment budget, marketing budget, the rate of re-call the car.

Results

The Growth Numbers of Members

The Taiwan Taxi Fleet owns over 16,000 dispatch cars. We investigate the related data of members,
including the grown numbers of members, the new and total download numbers, the dispatch call
numbers, call numbers of members, average call numbers of members in 2016, average of new
download numbers and growth rate of download numbers in 2016. And the new download numbers
still continue to grow up in the average numbers of 64,383. The total growth rate of download
numbers in 2016 reach to 34%. The download numbers also continue to grow up and show a stable
grown situation of members. The growth of members can bring more network externality and create more benefit and value to the firm [16, 17]. The growth numbers of members present the improvement of performance and also enhance the network externality in the digital platform of APP at the same time. That shows the members can create the value for the digital value chain. Therefore, the results support the hypotheses of P1a and P1b.

**Performance in Revenue**

The total dispatch call numbers of APP are 16,240,835 times, one dispatch call number will pay 10 dollars to the firm, then, the total revenue from the dispatch call numbers of APP are 16,240,835*10=162,408,350 in 2016. The average call numbers of members 2016 are 5.37 times, that means one member will create 5.37*10=53.7 dollars to the firm in 2016, and the total download times are 2,275,888. The predicted revenue is 2,275,888*53.7=122,215,185. We find the actual revenue is over the predicted revenue: 162,408,350-122,215,185=40,193,164. That shows the members can create more benefit than predicted revenue for the firm through the digital platform of APP. On the other hand, the revenue from the digital platform also can use to support the budget of R&D plans. Thus, the results support the hypotheses of P2a and P2b.

**Added Value in R&D Projects of Service Innovation**

The firm have operated three R&D plans to improve the functions in the digital platform of APP. The first project is the APP 5.0 revised to APP 6.0. The second project is the multiple taxi which is a coordination project with government to provide the privacy car with legitimate license for members to choose and also provide several customized services. The third project is mainly to provide an ease of use APP interface with diverse and new payment functions. Thus, the R&D projects, with the budget from the revenue of the APP platform, supply diverse and technological new service and add value to members in the digital platform of APP. As the results, the hypotheses of P3a and P3b are supported.

**Customer Stickiness of APP**

We investigate the customer stickiness by the re-call rate of the new and original members and also compare the re-call car rate of APP with other channels of convenience store and website and others. The new and existing members of re-call car of APP within 90 days are both higher than the total members of all channels. The year growth rate of new and existing members of successful task are (1.3+4.3)/10.1=56.56%. It is over 50 percentages in the year growth rate of total members of successful task. That means the APP members have higher customer stickiness than other channels members. Then, the re-call car rate in different channels that the re-call car rate of APP channel is 64% higher than other channels. That means the members will call car again by APP more than using other channels. Thus, the results also provide the evidence that the APP members have higher customer stickiness than other channels and the platform of APP can create more value for the digital value chain. As the results, the P4a and P4b are both supported.

In sum, the eight hypotheses are all proved, hence, we can demonstrate the value chain can shape a circle to continue working in circulation. The members of the digital platform of can continue to grow up and create enough revenue to support the R&D projects to enhance the platform functions. Then, the divers, novel and convenient digital platform can attract and absorb more and more members to use the digital platform to create more valuation to the digital value circle. It can form a positive digital value circulation in the digital platform.

**Conclusion**

Finally, we demonstrate several conclusions as following.

Create the network externality by the growth numbers of members

The critical and the most essential condition is that the numbers of members can create the revenue more than the expenditure of the digital platform. The members play the main resource of revenue and
value creation. It also proves the characteristics and effect of network externality in the digital platform. The value accumulation model suggests that the value of the network will increase rapidly with the increase in the number of members in the network externality, and the increase of value will attract more members to join. It will repeat round and form a circle [13]. That means, consumers in a network whose actions have direct influence on the economic utility of other consumers have network externality on their behaviors of other consumers [8, 9, 19, 12]. Therefore, the network externality of the growth numbers of members can create more valuation for the digital value circle of platform.

Continue to enhance service quality to added value in the digital platform

The digital platform needs to continue to improve the functions of the platform or supply new and convenience service for the members and enhance the service quality to the members to add value in the digital platform. Service quality in the website will affect the customer perceived value and the customer loyalty to the website (Lee, Hsiao, & Yang, 2010). Hence, the firm can create added value through improving the reforming functions of the platform and providing various service to the customers in the platform. The added value can attract more members to use the digital platform and to form a positive value circulation.

In sum, the contents of the digital value creation circle of service innovation include members and platform. The two elements are both the drivers to push the digital value creation circle to circulate positively. The members bring the network externality and the performance will increase with the increasing members. Then, the firm can use the revenue to support the enhancement of the service quality to create more added value and increase the growth numbers of members. When the value creation brings the revenue more than the cost of the operation of the digital platform, it will form a positive digital value creation circle without the other input from other budget.

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