

Customer knowledge orientation as a key to business model innovation of free-to-fee switch

Wen-Hong Chiu, Zong-Jie Dai, Hui-Ru Chi and Pei-Kuan Lin

Abstract

Purpose – This study aims to explore the innovative strategies of business model of the free-to-fee switch, the relationship between the business model innovation and customer knowledge and further develop a conceptual model.

Design/methodology/approach – This study adopts a multiple case study method with abductive research logic, following the replication logic to select samples. A total of eight outstanding companies with altogether 312 free-to-fee switch events were selected from 1998 to 2021.

Findings – A strategic matrix with four innovative business models for the free-to-fee switch is generated. The parallelism between the models and customer knowledge orientations is also found. Further, the study develops the conceptual model regarding customer knowledge orientation as a key mediation.

Research limitations/implications – The study highlights the conceptualization definition of customer knowledge orientation and its mediation effect to the business model innovation of free-to-fee switch, which is a new issue compared with previous research. Furthermore, it reveals that there exists organizational ambidexterity, which brings a new definition of customer knowledge orientation.

Practical implications – This study suggests how to integrate customer knowledge orientations to support the marketing process of the business model of free-to-fee switch. It also proposes a specific mechanism to conduct the free-to-fee switch with the introduction of four innovative strategic models and eight evolutionary paths.

Originality/value – This study creatively proposes the strategic matrix and the conceptual model of business model innovation of free-to-fee switch. Moreover, a new conceptual definition of customer knowledge orientation is specified.

Keywords Business model innovation, Customer knowledge orientation, Free-to-fee switch, Innovation strategy, Knowledge management

Paper type Research paper

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1. Introduction

In this fast-growing century of modern technology, digital convergence technology provides freemium service to customers with its high feasibility, and hence creates new business models. As business managers become more and more aware of the integration of science and technology, the diversity of product and service will continue to increase (Brown, 2017). Brynjolfsson and Collis (2019) discovered that free digital services and goods are more valuable to most customers than real products. Companies often attract customers through freemium service and began to require the payment after they form a concept to the brand and services of the company. This approach is defined as free-to-fee switch and the business model changes from offering a freemium service to premium (Cziehso *et al.*, 2019).

Free service issues in industrial background, as well as related consumption of company profitability is not a new topic, but there is a lack detailed research estimates about

company profits loss on free service (Mustak, 2021; Ulaga and Michel, 2018; Witell and Löfgren, 2013). Previous research focus on extended services for fee in freemium business models (Gu *et al.*, 2018) and the spillover effect of forced free-to-fee switch (Pattabhiramaiah *et al.*, 2018; Cziehso *et al.*, 2019). Most previous research on free-to-fee switch mostly focused on pricing introductions (Faugère and Tayi, 2007), fee-based services in freemium business models (Gu *et al.*, 2018), spillover effects of forced free-to-fee switches (Pattabhiramaiah *et al.*, 2018) and psychological mechanisms such as customer reactions (Cziehso *et al.*, 2019). Thus, free-to-fee switch may require a more comprehensive approach, not simply moving to free business model (Barry and Terry, 2008; Mustak *et al.*, 2021).

Business model innovation is defined as designing a new or modifying existing system or discovering different business models (Schneider and Spieth, 2013). Although business model has been identified as the key to service infusion, few studies investigate free-to-fee switch strategies to change business model for services, and lack of thoroughly understanding in how the switch process operates in different types of free services (Mustak, 2021; Ulaga and Michel, 2018; Witell *et al.*, 2013). Furthermore, business model can be considered as a dynamic process of a structured knowledge cluster, which includes explicit and implicit components (Chen *et al.*, 2020).

Knowledge has become a strategic resource and the basis of organizational competitive advantage (Aghamirian *et al.*, 2015). Previous studies have shown that the management of knowledge is indeed a key success factor for customer relationship management (Gebert *et al.*, 2003). Knowledge supports customer relationship management to achieve its main goals, through managing knowledge for, about and from customers. Knowledge is the basis of competitive advantage as well as a valuable organizational resource from a strategic perspective (Ragab and Arisha, 2013). The integration of knowledge management and customer relationship management is a strategic issue, which has a great impact on the long-term competitiveness of the organization (Liew, 2008). Customer knowledge management is usually defined as a combination of knowledge management and customer relationship management principle (Belkahla and Triki, 2011). Customer relationship management involves the company's data/knowledge mining, while customer knowledge management gains knowledge directly from customers, and shares and expands these knowledge (Taghizadeh *et al.*, 2018). By integrating customer relationship management and knowledge management into customer knowledge management model, the risk of failure can be reduced (Gebert *et al.*, 2003).

To sum up, under the era of digital technology, freemium services have high feasibility for customers, and hence, they create new business models. In addition, customer knowledge has been regarded as a strategic resource for building a new business model. However, free-to-fee switch still requires a more comprehensive approach to explore how the switch process operates in different types of free services. In addition, there were also few studies from the customer knowledge management perspective to investigate the business model innovation of free-to-fee switch.

To explore the insights in the business model innovation of free-to-fee switch as well as its operation mode, this study conducts a multiple case study. Multiple case study approach is valuable for developing theories, evaluating projects and formulating interventions because of its flexibility and rigor (Lashgari *et al.*, 2018). In this study, eight companies from three digital convergence industries are selected, concerning social networks (Tencent, Meta, Line and Douban), cloud services (Google and Apple) and video industry (YouTube and Hulu). Abduction can be classified as an approach of producing knowledge (Järvensivu and Törnroos, 2010). Abductive reasoning refers to the preliminary inference based on the interaction between existing theories and data when an unexpected discovery occurs (Timmermans and Tavory, 2012). In the abductive approach, the research process begins with "surprising facts" or "puzzles," which cannot be explained by current theories, and the

research process aims to explain them (Bryman and Bell, 2011). Therefore, this study adopts the multiple case study method and abductive research logic to explore the innovative strategies of business model of free-to-fee switch and further develop a conceptual model based on the perspective of customer knowledge management.

In the following paragraphs, previous research is reviewed including free-to-fee switch, business model innovation and customer knowledge management. Section 3 basically describes the multiple case study method, an abductive logic and the sample selection of the company to be studied. The sample cases are selected from three different industries. Eight enterprises and altogether 312 events of freemium service are collected and analyzed. Finally, a conceptual model of free-to-fee switch with six propositions and sufficient evidence are concluded.

2. Literature review

2.1 Free-to-fee switch

In the industrial market, free service is defined as suppliers' professional capabilities, knowledge and other assets to achieve the actual business results and achieve the purpose of value exchange (Mustak *et al.*, 2021). Big data is considered a trigger factor and promoter for the entire digital innovation process (Trabucchi and Buganza, 2019). Through case studies, services can be classified under the variables of customer contact and degree of customer participation, which are impacted and re-shaped by big data (Buganza *et al.*, 2019). Regarding "free" service provided by digital platform, people have become products in the form of personal data, which are sold to advertisers and data agents (Sadowski, 2019). End users are the primary source of value creation, creating and providing data while enjoying free services (Trabucchi and Buganza, 2019). With the exploitation of big data, company can capture value from user-source data by leveraging a two-sided market structure, thereby achieving the free-to-consumers business model (Trabucchi *et al.*, 2017).

The free-to-fee switch is defined as a practice of introducing service for free to customers at first and then require a payment after obtaining market recognition, which is also a switching from a freemium business model to a premium model (Cziehso *et al.*, 2019). The switching strategies of free-to-fee switch may have an indirect impact on the sales of products (Visnjic and Van Looy, 2013; Witell *et al.*, 2013). Companies must determine the service that can stop for free and start for fee, referring to free-to-fee transition/transformation (Uлага and Michel, 2018). Based on the research of Mustak *et al.* (2021), existing literatures of free-to-fee switch can be categorized into internal and external service growth challenges orientation, literature on business to customer contexts and literature on price fairness. In the research of internal and external services, they are focusing on the organizational structure (Parida *et al.*, 2014), culture marketing strategy and implementation (Uлага and Reinartz, 2011), market structure (Rabetino *et al.*, 2015) and customer relationships (Barry and Terry, 2008). Furthermore, the research of Wagner *et al.* (2014) focuses on whether the limitations on free services affect the evaluation of free and premium versions, and their finding indicates the possibility of switch can be increased by providing strong functions between service for free and service for fee.

However, few research pay attention to potential psychological mechanisms (Cziehso *et al.*, 2019). The free-to-fee switch in the consumer environment has psychological challenges in industrial services (Lambrecht and Misra, 2017; Mustak *et al.*, 2021). The meaning of "free" can be explained as a transfer of service cost, or it can be transferred between the current and future or shifted to the non-monetary market (Anderson, 2009). In the research of price fairness, previous literature mainly focused on dual entitlement principle (Mustak *et al.*, 2021), the ability to set prices and properly implemented (Mustak *et al.*, 2021). Due to the lack of sufficient knowledge or strategic basis, the development of price services is a major

challenge for managers (Liozu and Hinterhuber, 2013; Mustak *et al.*, 2021). Although previous literatures focused on free services based on data exploitation, giving the definition of free-to-fee switch, discussing the psychological mechanisms and price fairness, there still lacks investigation on the comprehensive approach of free-to-fee switch.

2.2 Business model innovation

The concept of business model has been existed for decades (Bellman *et al.*, 1957; Foss and Saebi, 2017). A business model will illustrate how the company can make a profit from its operations (Witell *et al.*, 2013). A business model is defined as the way enterprises create value to customers, induce customers to pay for value and convert the payments to profits (Teece, 2010). Although it is defined in cross-study, most current definitions are close or consistent with the definition of Teece (2010). The business model is the company's description of the cost and profit structure, operational logic and customer value proposition (Foss and Saebi, 2017; Teece, 2010). Business models focus on the construct of e-commerce, strategy and technology management (Foss and Saebi, 2017; Zott *et al.*, 2011).

There three research streams of business model literatures (Foss and Saebi, 2017; Zott *et al.*, 2017), including "business model for enterprise classification" (Magretta, 2002), "business model is considered a predecessor of company performance" (Zott and Amit, 2007, 2010) and "business model is a potential innovation unit" (Zott *et al.*, 2011). Some research on business models is not a clear theory (Ramdani *et al.*, 2019), but adopting theories such as resource-based views (Al-Debei and Avison, 2010) and transaction cost economics (DaSilva and Trkman, 2013). Zott and Amit (2010) contended that activity system is the key to understand the company's business model, and there are two groups of parameters, design elements and design themes, to describe how company develops business and cooperate with partners to create value. Moreover, summarizing the theoretical framework for business model innovation will better understand how the company is innovating in business model (Ramdani *et al.*, 2019).

Business model contains several features (Kraus *et al.*, 2020). In respectively, the business model clarifies the value proposition, creating products, generating income from the new service, investigating the relationship between suppliers and customers and simultaneously looking for potential competitive strategies (Kraus *et al.*, 2020). The outcomes of business model innovation include corporate performance, competitive advantage, innovation and strategic flexibility (Bashir *et al.*, 2020; Zott and Amit, 2010). In practice, the value of the freemium business model is that "free" can generate value to build key resources for the enterprises (de Oliveira and Cortimiglia, 2017). To sum up, it remains unclear what could be the key to influence freemium business model innovation and the conceptual logic behind.

2.3 Customer knowledge management

Customers are the external knowledge resources of companies, involving in service design processes to create new service (Storey and Larbig, 2018). Companies need a variety of customer knowledge, such as categorizing customers, using knowledge to retain and support customers, obtaining new customers, improving products and services, creating new products and services and better understanding the market (Aghamirian *et al.*, 2015). Customer knowledge management focuses on the company's most valuable customer knowledge (Gebert *et al.*, 2003). Customer knowledge management is the source and deployment of customer knowledge (Khosravi and Hussin, 2018). In addition, customer knowledge management is a new organization approach for acquiring, sharing, transferring and utilizing information, knowledge, experience and ideas related to customer (Taheerparvar *et al.*, 2014; Khosravi and Hussin, 2018).

Customer knowledge management is related to the management and development of customer knowledge (Rowley, 2002). And, Rowley (2002) concluded two types of customer

knowledge: knowledge about customers and knowledge possessed by customers. Furthermore, customer knowledge edges can be classified into three categories, including market knowledge, which meets customer knowledge needs, knowledge related with historical customers data and information and knowledge of customer feedback (Khosravi and Hussin, 2018). Customer knowledge management can also be discussed in terms of the concepts of knowledge-oriented leaders, trust management and company performance (Chaithanapat and Rakthin, 2020). To determine the basic elements of knowledge management in customer-oriented process, customer knowledge management model can be adopted (Gebert *et al.*, 2003).

Moreover, researchers further proposed three main streams of customer knowledge management – knowledge from customers, knowledge about customers and knowledge for customers (Taghizadeh *et al.*, 2018). However, the literature clearly shows that the three views of customer knowledge management are different from each other (Taghizadeh *et al.*, 2018). The effectiveness of customer knowledge management depends on how companies managed their relationships with customers to obtain, transfer and use customer knowledge to benefit for both customers and companies (Chaithanapat and Rakthin, 2020; Khosravi and Hussin, 2018). Knowledge from and about customers, customer knowledge management can inform the company of the changing needs of customers; through knowledge for customers, customer knowledge management can provide customers with the information they need (Taherparvar *et al.*, 2014). Previous literatures of customer knowledge management are highly dispersed and how customer knowledge orientation affects business model innovation remains to be explored.

3. Methodology

3.1 Multiple case study method

To explore the insights in the business model innovation of free-to-fee switch as well as its operation mode, this paper conducts a multiple case study. Multiple cases are designed in the constructing framework, in which similar results of multiple cases can be predicted (Yin, 2014). According to Yin's research (2014), each research method can be used for all three purposes – exploratory, descriptive and explanatory. As the issue of “what” is rationale for conducting an exploratory study (Yin, 2014), the objective typology of this study is exploratory study to explore what will be a key to business model innovation of free-to-fee switch. The insight of selecting multiple cases is to consider a “replication” design logic, which is developed toward a rich, theoretical framework (Yin, 2014). Yin further describes the process of developing external validity evidence, such as using replication logic, which is replicated on the sampling framework (Mohd Ishak and Abu Bakar, 2014). Therefore, this study follows the replication logic to select samples.

An abduction research logic can be used as the foundation of case study and the entire abduction process is repeatedly carried out between empirical materials and literatures to establish new frameworks (Rashid *et al.*, 2019). The research of Dubois and Gadde (2002) indicated that if the research aims to find new things and new variables or relationships, the abductive approach would be effective. The abductive approach may describe the inference form based on the qualitative analysis of many types of themes. Specifically, when the researcher develops the theme, codes and categorized the data during the analysis process, at least to a certain extent, it is “fair guess” about the meaning of data (Lipscomb, 2012). Openness to other theoretical frameworks, which become useful in the case study, is one of the characteristics of abductive research (Conaty, 2021). Awuzie and McDermott (2017) proposed several aspects of the utility of abductive approach, including the observation of the centrality related to a phenomenon; the development of the proposition based on this observation results; relying on reliable background theory to explain the propositions; using the data of interpretation and induction when verifying the explanation of the proposition; verifying new knowledge based on the pair of pairs

interpretation of initial propositions. Based on previous research of abduction, deduction and induction, [Rashid et al. \(2019\)](#) summarized abductive research logic and different strategies in different phase of research. According to previous theory, abduction starts with unexpected, abnormal or surprising observations, and then systematically explains the inferences and findings of the initial observations ([Brandt and Timmermans, 2021](#)). To sum up, this study adopts the multiple case study and an abductive research logic to explore how customer knowledge management will affect business model innovation of free-to-fee switch.

3.2 Data collection

The data collection took place from 1998 to 2021. There are altogether eight representative cases from three digital convergence subindustries, according to the industry positioning when they were established. They are Tencent, Meta, Douban and Line in social network subindustry; Apple and Google in cloud service subindustry; as well as YouTube and Hulu from video subindustry. The criteria for case selection includes those benchmark companies and industry leaders, with high annual turnover, good brand reputation and large-scale employees, listed in the forefront of the industry such as the world top 500 companies. The collected data consisted of three parts: the first part is mainly from the secondary data, including database of Udn.com (enterprise free-to-fee service reports and related news), public information from government authorities and relevant data on the official website of the sample companies (official news about free-to-fee switch, enterprise milestone events and financial reports). The second part is from in-depth interviews, and the third part is participatory observation and other secondary data such as information collected by using Google search engine and cases appeared in journals and academic books. Based on the above data sources, a total of 29,982 service events are collected, concerning Line (8,804), Meta (10,956), Tencent (3,029), Google (61), Apple (330), YouTube (5,914), Hulu (148) and Douban (740). The searches include four keywords: free-to-fee switch, free service, service for fee, business model, innovation and finally, selected and obtained 312 events related to free-to-fee switch service offering.

The data sources, total number of data as well as abbreviations are listed in [Table 1](#). Data source of in-depth interview include altogether 14 interviewees of six senior executives and

Table 1 Overview of data sources and document coding

<i>Data sources</i>	<i>No.</i>	<i>Abbreviations</i>
1. Primary data sources		
Database of Udn.com (news, magazines, reports, etc.)	120	UDN 1–120
Public information of government authorities (January 2003 to December 2021)	66	PIA 1–66
Relevant public data from the website of the cases, journals, and academic books	103	RPD 1–103
2. In-depth Interviews		
Interviews with 6 senior executives (May 2020 to September 2020; average interview length 120 min)	6	ISE 1–6
Interviews with 8 board members (July 2020 to November 2020; average interview length 150 min)	8	IDM 1–8
3. Participatory observation and other secondary data observation data from sample companies		
Internal documents (including paper data and electronic data) (January 2003 to October 2021)	80	ID-S 1–80
Social media posts about the selected companies and cases (December 2021)	256	SM-C 1–256
Popular press articles (January 2003 to December 2021)	78	PA-P 1–78
Total	762	
Note: Abbreviations such as UDN 1–120 stands for document name UDN and the number of files		

eight board members from different departments and positions in the eight case companies, including the CEO of Douban, senior manager of Tencent, senior executives of Hulu, etc. Due to the limited time of senior executives and board members, interviews were mainly carried out via telephone and some social media sites such as WeChat and WhatsApp; face-to-face interviews were conducted with senior managers from companies located in the same city as the research team. In addition, the interview guide used in this case study is presented in [Appendix](#). After gathering all information from the recorded interviews, coding stages were started according to different themes and categories of interview questions. To reduce the possibilities of human errors and bias, interview transcripts were coded separately by different researchers. After comparing all the coding results, adjustments were made accordingly.

Moreover, participatory observation and other secondary data are from the sample companies, internal documents (including paper data and electronic data), social media posts about the selected companies and cases and popular press articles. In terms of participatory observation, the research team members are long-term users of the eight selected case companies and are basically registered VIP members. For example, two of the team members have used Facebook for more than ten years, and four members have been chatting with friends through Line for more than five years. As registered members of these eight companies, participants have a basic understanding of service for free and service for fee. They even went through a complete transition from free to fee. For example, as an iCloud user, starting with free file space, as the number of files grows, there is a transition to pay for more storage space. In sum, 762 documents were collected for database.

3.3 Data analysis

According to the research of [Yin \(2014\)](#), the main analysis unit is likely to be located at the level involved in the main research problems. Therefore, the analysis unit in this study is the free-to-fee switch service event extracted from each of the sample companies. The data analysis is followed by the multiple case study procedure of [Yin \(2014\)](#):

- define and design (develop theory, select the sample case of free-to-fee switch service and design case study and data collection protocol);
- prepare, collect and analyze (conduct replicated case studies and write case report);
- the last step of the abductive approach is integration, which is the interpretation of the experience materials of one case study comparing with another case to reveal the cross-case analysis, and it will help establishing a research framework ([Rashid et al., 2019](#)). All the data sources are concluded during this process, and document coding is finished (subject to open coding and axial coding). The coding shall be continuously amended and adjusted; and
- analyze and conclude (draw conclusion, modify theory and write report).

The reliability and validity of this study are described as follows. Case study strategy of the development case study database can ensure the reliability of the data collection stage ([Yin, 2014](#)). In this study, a data set with 312 event cases was built. In addition, a protocol can improve the reliability of case study, which aims to guide researchers to collect data from a single case even if it is one of the several cases in multiple case studies ([Yin, 2014](#)). Starting from the geometric concept of triangulation, the concept of multiple data sources of triangulation is introduced to improve the effectiveness of the research ([Fusch et al., 2018](#)). Triangulation means being able to observe the same phenomenon or research topic through more than one data source ([Abdalla et al., 2018](#)). Triangulation protocols include data triangulation, investigator triangulation, theoretical triangulation and method triangulation, which can be used to increase the research validity ([Fox and Denzin, 1979](#);

Fusch *et al.*, 2018). In this study, various data collection methods (in-depth interviews, observations, secondary data, etc.), multiple researchers exploring the research phenomenon and the use of multiple research methods all constitute triangulation. Therefore, internal validity was established in this study. Yin (2014) proposed case study tactic of using replication logic in multiple case studies in external validity tests in the phase of research design. As this study follows the sample logic of replication, external validity is increased by replicating the sample cases. That is, the higher the number of replications, the more effective the data is.

4. Findings

4.1 Evolutional paths and innovative business models

Eight evolutional paths are induced based on the data analysis. The basic definitions are illustrated as follows. First, in terms of service expenditure, “Free” means that the consumer’s monetary cost of obtaining a product or service is zero or lower than the service cost price, and vice versa is “Fee”. Second, based on the previous research of service classification, “a single service vs. a bundle of services,” “a single service vs. a package of several services” as well as “multisite vs. single site service delivery” are defined (Lovelock, 1980; Lovelock, 1983; van der Valk and Axelsson, 2015). In this study, “Existing Service” is defined as a single product/service that is currently existed and provided for the customers by a company (e.g. Google Drive with 15 GB of free storage space is a single service). “Multiple Services” mainly refers to the diversified services such as a set of services with multiple functions or a package of several services, including services across industries (e.g. Google Docs with features of editing docs, texting messages and uploading scanned images of text files, which is defined as multiple services). Third, different charging objects include both customers and the third party such as advertisers.

“Existing Service for Free”: A single product/service is provided only to consumers, and the consumers obtain the product/service at a price of zero or lower than the cost of the service. “Existing Service for Fee”: Consumers pay a price to get a single product/service that the company provides in the industry or related industries; “Multiple Services for Free”: Multiple or several products/services (including services across industries) are provided to consumers, and the consumers get all the products/services at a price of zero or less than the cost of service; “Multiple Services for Fee”: Consumers pay a price to get the multi-products/services offered by the company (including services across industries).

Specific path type is marked by “[]”. Eight innovative fee-to-free switch paths are the reasonable changes of existing services for free, existing services for fee, multiple services for free and multiple services for fee. Four innovative business models are further concluded as follows.

4.1.1 *The honey–poison model*. Based on the examples of iCloud and Google Drive, there are two evolution paths in this model, including:

Path M1: From [Existing service for free] to [Existing service for fee].

iCloud is the cloud storage and cloud service provided by Apple. Users can store music, photos, apps, contacts, calendars, etc. and push the wireless broadcast to all devices of the users [Existing service for free]. In 2016, the 2 TB storage space payment plan was launched [Existing service for fee].

Path M2: From [Existing service for free] to [Existing service for fee] through [Multiple services for free].

Google launched Google Drive in 2012, providing users with 15 GB of free storage space [Existing service for free]. Later, the Google Docs feature was launched, users can search their text messages online if they upload scanned images of text files [Multiple services for

free]. Google Drive also offers a paid membership system that gives users access to more storage space [Existing service for fee].

To conclude, the honey–poison model means that the company launches a limited free service (such as cloud storage space) and combining diversified functions to attract more consumers.

4.1.2 The voluntary model. This study extends that consumer is willing to pay for products/ services to use more advanced services after using freemium services. Based on the examples of YouTube, Hulu and Line, there are three evolution paths in this model, including:

Path M3: From [Existing service for free] to [Multiple services for fee].

Launched in 2005, YouTube is a video website for the concept of sharing content freely [Existing service for free]. In 2009, YouTube began to develop the potential of advertising, allowing advertisers to advertise based on content characteristics, audience age and hobbies [Existing service for free]. In 2015, the paid service YouTube Red was launched, which consisted of subscription multiple services, including ad-free videos, downloads, music features and original content from YouTube [Multiple services for fee]. Moreover, in 2017, YouTube launched YouTube TV. Subscribers can use the App to store favorite program segments in the cloud DVR, search TV shows and movies by themes, command YouTube TV by voice and text or voice chat with customer service [Multiple services for fee].

Path M4: From [Existing service for free] to [Multiple services for fee] through [Existing service for fee].

In 2007, the three major US broadcasters (NBC, FOX, ABC) created the Hulu video website, which Initially offered three major broadcaster episodes on the website for free [Existing service for free]. In 2016, the free viewing mode was terminated and switched to the payment subscription model [Existing service for fee]. In 2017, Hulu combines virtual reality (VR) applications to support Oculus' latest social features Oculus Rooms, allowing users to watch 360-degree paid content with their friends, and subscribers can socialize in a virtual room [Multiple services for fee].

Path M5: From [Existing service for free] to [Multiple services for fee] through [Multiple services for free].

In June 2011, Line launched its main free-to-play communication application Line, which used the free sticker of official character to attract consumers [Existing service for free]. In 2015 Line launches payment service Line Pay, together with Cathay United Bank, launched a “stored value payment account” that account can be opened online with transfer functions [Multiple services for free]. Line launched affiliate application (App) Line Game for users to download games for free and selling virtual and other optional services in online shopping mall, which become the main source of revenue for Line [Multiple services for fee].

The voluntary model means that the company originally provided a freemium singular service, establishing a niche market and then expanding service items, and launching paid items on the main functions for consumers to purchase.

4.1.3 The leverage model. The leverage model indicates that the use of freemium goods to attract consumers to pay out their personal information, and then sell it to third-party institutions to obtain benefits. Based on the examples of Tencent and Meta, there are two evolution paths in this model, including:

Path M6: From [Multiple services for free] to [Multiple services for fee] through [Existing service for fee].

Tencent launched the instant messaging software Tencent QQ in 1999, with the main function of transmitting messages and transferring files [Multiple services for free]. In

January 2003, the QQ Show was officially launched as a new function in QQ. Customers can purchase virtual goods and dress up their hairstyles and cloths. At that time, Tencent was established for about three years, and it has explored various profit models. In the first half year of QQ Show, five million users purchased the service. Since then, Tencent has opened the door to profitability [Existing service for fee]. In 2003, Tencent launched QQ games and charged users for VIP services. Tencent has many product feature categories and derivative services, and launched paid services, such as QQ membership and rating system, the sales of game virtual goods [Multiple services for fee].

Path M7: From [Multiple services for free] to [Multiple services for fee].

In addition to upload photos and videos, Meta also provided a variety of free service such as sending instant messages, user message boards, activities and so on [Multiple services for free]. Through the exploration of profitable model, the initial revenue source of Meta came from several parts, including advertising and physical “Facebook” gift card, etc. In 2018, Meta launched Facebook Gaming (or fb.gg) officially, which is a platform of live streaming video and cloud gaming service. Customers will pay for the virtual currency and virtual game products on Facebook Gaming [Multiple services for fee].

The companies attract people with freemium and diversified functions and allow them to join the members, and then sell the member information to third-party organizations to obtain profits. This research failed to find a sample company that is consistent with this path. In sum, the business model is free for consumers, whether they use existing or multiple services and develop toward the diversified service of third-party organizations.

4.1.4 The shelling model. This study extends to the enterprises that, for the purpose of targeting at a specific ethnic group/market, will limit the original multi-functionality to a single function and operate accurate marketing. Based on the examples of Douban, there is one evolution path in this model, including:

Path M8: From [Multiple services for free] to [Existing service for fee].

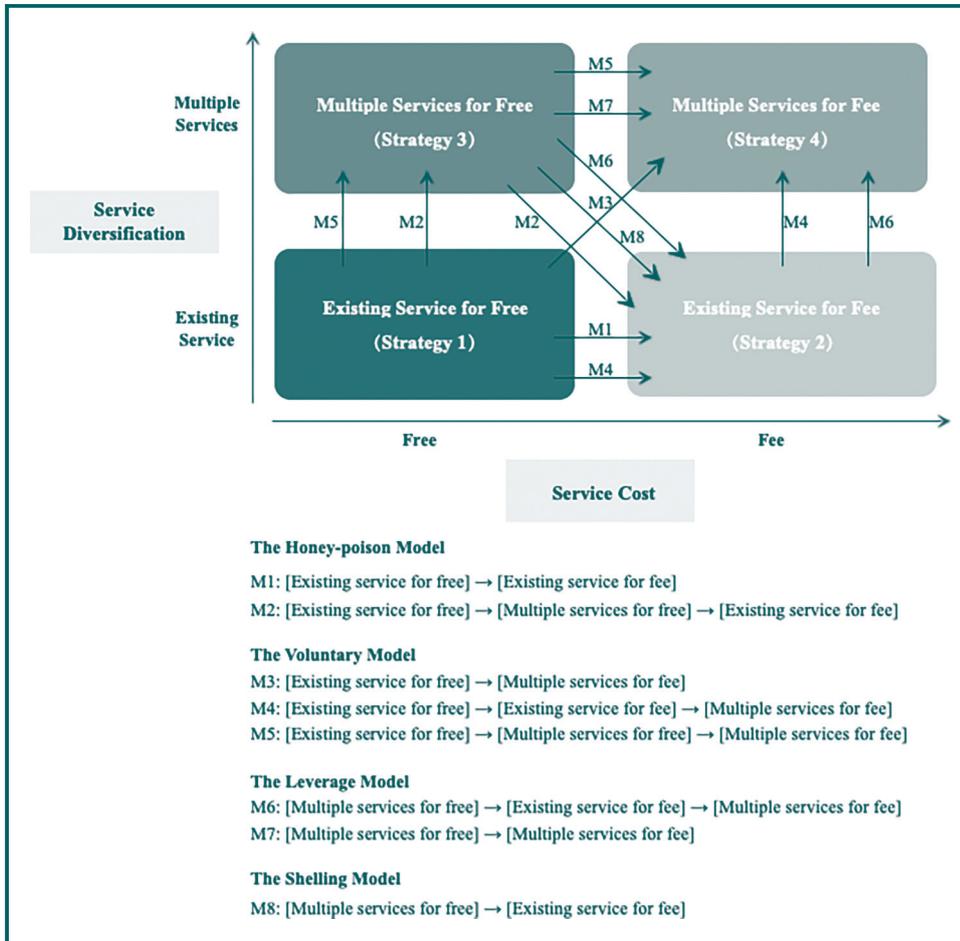
Douban is a community-based website that was founded in 2005. At the end of the year, it combined book reviews, film reviews and music reviews. In May 2012, an online choosing seat and purchasing ticket function “Douban Reading” was launched. In January 2013, Douban launched “Douban FM,” which provided free exclusive personalized music listening function. By providing various free services such as Douban Reading and Douban FM, customers were attracted. [Multiple services for free]. However, in March 2017, Douban launched the content-paid product “Do ban Time” and began to make a big change [Existing service for fee]. It began to cut off “Douban Stuff,” “Douban Moment,” “Douban Red Peach,” “Douban 9 o'clock,” “Alpha City,” etc.

The Shelling model means that the company originally attracts consumers by freemium price and diversified functions and then launches a single payment function service for accurate marketing.

4.2 Strategic matrix for business model innovation of free-to-fee switch

According to the above results, this study proposes the strategic matrix constructed by service expenditure and service diversity as [Figure 1](#). First, in terms of service diversity (vertical axis), it is mainly divided into “Existing Service” and “Multiple Services,” in which the cases analysis is conducted based on the above structure and then we obtain the profitable logic behind the business model innovation of the cases, i.e. the profit model of the evolution paths under this framework. For example, how can a company switch from “Existing Service for Free” to “Existing Service for Fee.” Therefore, this study aims to clarify the logic of innovative business models between “Free” and “Fee.”

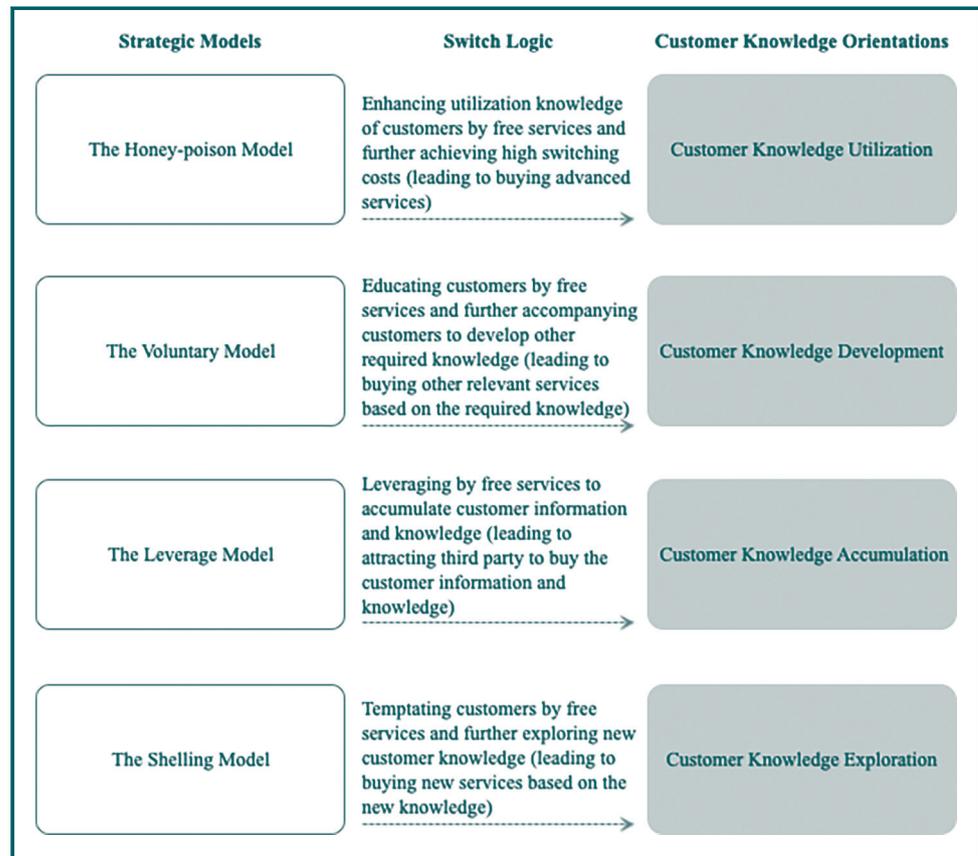
Figure 1 Strategic matrix for business model innovation of free-to-fee switch



4.3 Strategic matrix and customer knowledge orientation correspondence

Based on the four models of strategic matrix in Figure 1, this study further induced the parallelism between the strategic models and the customer knowledge orientations, which is shown in Figure 2. There are four orientations of customer knowledge, including knowledge accumulation (extracted from the leverage model), knowledge utilization (extracted from the honey-poison model), knowledge development (extracted from the voluntary model) and knowledge exploration (extracted from the shelling model). Firstly, from “honey-poison model” to “customer knowledge orientations,” the switch logic is that after using the service for a long time, switching cost of customers will become higher, and the viscosity of users will increase. Thus, it is not easy to abandon the current service and change to use other services. In this way, the utilization knowledge will be strengthened. In sum, the switch logic emphasizes enhancing utilization knowledge of customers by free services and further achieving high switching costs (leading to buying advanced services). Moreover, from “the voluntary model” to “knowledge development,” the switch logic is to educate customers with free services as well as increase their interests, and the company will develop customer knowledge to provide customers with new services for fee and better customer experience. In sum, the switch logic emphasizes educating customers by free services and further accompanying customers to develop other required knowledge (leading to buying other relevant services based on the required knowledge). Furthermore, from “the leverage model” to “knowledge accumulation,” the switch logic is through

Figure 2 The parallelism between the strategic models and the customer knowledge orientations



leveraging free services such as online free music to accumulate customer information and data to form market asset. In this way, the customer knowledge is accumulated. In sum, the switch logic emphasizes leveraging by free services to accumulate customer information and knowledge (leading to attracting third party to buy the customer information and knowledge). Finally, from “the shelling model” to “knowledge exploration,” the switch logic is to attract customer with multiple free services to test which service is welcomed by the market and then launch the specific single service for fee to customers. This process is quite similar with exploring the new customer knowledge. Therefore, the orientation of knowledge exploration is concluded. In sum, the switch logic emphasizes attracting customers by free services and further exploring new customer knowledge (leading to buying new services based on the new knowledge).

Compared with previous research, this study brings new implications on the definitions of customer knowledge orientations. The definitions, relevant evidence and literatures for each construct are summarized in Table 2. First, freemium service orientation is defined as in addition to the cost of money, freemium service can reduce consumer psychological costs (Mustak *et al.*, 2021).

Second, customer knowledge orientation can be defined as different orientations of customer knowledge, including knowledge utilization, knowledge development, knowledge accumulation and knowledge exploration. These different orientations are extracted from previous strategic models and company free-to-fee switch cases. Customer knowledge accumulation can be defined as the process of collecting customer information such as user basic data, interaction data, behavior data, etc. Previous research has shown that the

Table 2 The constructs of the conceptual model of free-to-fee switch

Constructs	Definition/sub-construct	Sample data	Relevant literature
Freemium service orientation	It is defined as in addition to the cost of money, freemium service can reduce consumer psychological costs	<ul style="list-style-type: none"> • Fee service orientation <ul style="list-style-type: none"> ➢ iCloud forms a proposition of free service to customer utilization knowledge (UDN 3, 28–30) 	<ul style="list-style-type: none"> • Mustak et al. (2021)
Customer knowledge orientation	<p>Typically defined as different orientations of customer knowledge, including knowledge utilization, knowledge development, knowledge accumulation and knowledge exploration</p> <ul style="list-style-type: none"> • Customer knowledge accumulation (defined as the process of collecting customer information such as user basic data, interaction data, behavior data etc.) • Customer knowledge utilization (defined as the knowledge of utilization is promoted as exchange cost is raised when customer get used to a service and form a user habit) • Customer knowledge development (defined as the development of the whole customer knowledge system) • Customer knowledge exploration (defined as exploring customer preferences and product service preferences, evaluating them in a range and finally, targeting the services that are most liked by customers) 	<ul style="list-style-type: none"> • Customer knowledge accumulation <ul style="list-style-type: none"> ➢ “Social media giants make people purchase data when watching Facebook, while user data is collected, Facebook’s free app will approve its customers to use the data they need” (ISE 5, 12–16) • Customer knowledge utilization <ul style="list-style-type: none"> ➢ There are groups of functions in Google Workspace. . .after the 14 days for free, users may form a user habit and keep using it (SM-C 9, 11-24) • Customer knowledge development <ul style="list-style-type: none"> ➢ In addition, YouTube development advertising. . .on advertisement according to their needs (ID-S 9, 18–25) • Customer knowledge exploration <ul style="list-style-type: none"> ➢ Through the exploration of the free mode with authors, Douban Reader store has become a platform for gathering readers and authors, and even developed into a mediator among publishers (RPD 10, 8–23) 	<ul style="list-style-type: none"> • Customer knowledge orientation defined by this research • Customer knowledge accumulation <ul style="list-style-type: none"> ➢ Varadarajan (2020), Zawaideh et al. (2018) • Customer knowledge utilization <ul style="list-style-type: none"> ➢ Chaithanapat and Rakthin (2020); • Customer knowledge development <ul style="list-style-type: none"> ➢ Johansson et al. (2019); • Customer knowledge exploration <ul style="list-style-type: none"> ➢ Santoro and Usai (2018)
Market competitive advantage	<p>Free formation of large flow, short-term formation of market competitive advantage, which is also the resources used by enterprises to create customer value</p> <ul style="list-style-type: none"> • Market leverage (defined as all the strategic resources such as customer data, information and knowledge, which can form and increase the market networking and flow capacity for the company) • Market lock-in (defined as the customer is locked and created customer loyalty when the cost of changing to another service is high) • Market trust (gained through the accumulation of high-quality services for a certain period) • Market innovation (is to provide innovative services, which meet the needs through the exploration of customer knowledge system) 	<ul style="list-style-type: none"> • Market leverage <ul style="list-style-type: none"> Manager said in interviews that a large amount of member data is collected and formed into market flow capacity advantages (ISE 1, 12–31) • Market lock-in <ul style="list-style-type: none"> ➢ Stable usage habit and the customer knowledge utilization is formed and increased customer loyalty (UDN 29, 52–68) • Market trust <ul style="list-style-type: none"> ➢ Hulu created Oculus rooms, providing customers with VR applications and 360-degree paid content in a virtual room. In this way, Hulu has developed its marketing rules and obtain customer trust (ID-S 2, 4–7) • Market innovation <ul style="list-style-type: none"> ➢ . . . free services such as Dou ban Reader, Dou ban FM. Dou ban further explored more possible services. . .target the most profitable service for fee (PA-P 6, 14–19) 	<ul style="list-style-type: none"> • Market competitive advantage <ul style="list-style-type: none"> ➢ Pereira and Bamel (2021), Maury (2018) • Market resource <ul style="list-style-type: none"> ➢ Monteiro and Foss (2018), Pereira and Bamel (2021) • Market lock-in <ul style="list-style-type: none"> ➢ Fliess and Volkers (2019), Zaim et al. (2018) • Market trust <ul style="list-style-type: none"> ➢ Choi and Storr, (2020), Ali et al. (2013), Luo et al. (2018) • Market innovation <ul style="list-style-type: none"> ➢ Ren et al. (2015), Quaye and Mensah (2019); Sheth et al. (2020)
Firm profit	Revenue and profit generated for the company through services provided to customers	<ul style="list-style-type: none"> ➢ Line supports 17 languages and multi-platforms and getting well known worldwide. Line gains the competitive advantage in the market, while profits a lot (RPD 98, 55–60) 	<ul style="list-style-type: none"> • Sheth et al. (2020), George et al. (2021)

Notes: *The coding rule of [Table 2](#) is followed with the rule of [Table 1](#) (e.g. UDN 3, 28–30 stands for database name UDN, file number 3 and range of pages 28–30). *The number of documents stands for the number of transcripts (collected per interview)

accumulation of knowledge (and customer knowledge management) is a key for improving the competitive advantage (Fidel *et al.*, 2018). Information about customers is the customer interaction for company to develop and accumulate (Varadarajan, 2020). Based on the actions of accumulating customer knowledge, market advantages such as market leverage will be summarized later. Customer knowledge utilization can be defined as the knowledge of utilization is promoted as exchange cost is raised when customer get used to a service and form a user habit. Customer knowledge management creates more valuable customers for the firm by using information technology (Chaithanapat and Rakthin, 2020). Customer knowledge development is defined as the development of the whole customer knowledge system. Customer knowledge development is the process of developing a better understanding of new service preferences (Johansson *et al.*, 2019). Customer knowledge exploration can be defined as exploring customer preferences and product service preferences, evaluating them in a range and finally, targeting the services that are most liked by customers. Previous research defined knowledge exploration as the learning activities entering new resources (Liu, 2006). Knowledge exploration is based on new external knowledge to improve discontinuous innovation (Santoro and Usai, 2018).

Third, these customer knowledge orientations not only create competitive advantages, but also bring profit for the company. These market advantages are named as market leverage, market lock-in, market trust and market innovation. Market competitive advantage is defined in this research as free large flow and short-term formation of competitive advantage, which is also the strategic resources used by enterprises to create customer value (Pereira and Bamel, 2021; Yu and Chen, 2018). Competitive advantages can be defined as capabilities or strategic resources, making the company attend competition for its competitors, which will lead to higher profitability (Maury, 2018). Market leverage is defined as all the strategic resources such as customer data, information and knowledge which can form and increase the market networking and flow capacity for the company. Based on resources-based perspectives, market resources underline the observed company's productivity, as well as firm performance such as innovation, growth, turnover and profits (Monteiro and Foss, 2018). Previous research indicated that continuous competitive advantage is to achieve through companies that have excellent location in technical resources and potential (Maury, 2018). Market lock-in can be defined as the customer is locked and created customer loyalty when the cost of changing to another service is high. In the marketing literature, lock-in is one of the terms that people cannot escape from a consumption situation (Fliess *et al.*, 2014; Fliess and Volkers, 2019). Market trust is gained through the accumulation of high-quality services for a certain period. Trust is one of the key factors of almost all market interactions (Choi and Storr, 2020; Misztal, 1996). The hinged moral strengthened market trust and enhanced the relationship between actors in the market (Ali *et al.*, 2013). In the existence of morality and profitability, this connection helps to pay attention to the company's role in society, the company's goals and profit maximum (Ali *et al.*, 2013). Market innovation is to provide innovative services that meet the needs through the exploration of customer knowledge system. In operational perspectives, the concept of marketing innovation has been defined as new marketing methods, involving significant changes in product design and packaging, product display location, promotion, pricing, etc. (Onwumere and Ozioma-eleodinmuo, 2015; Quaye and Mensah, 2019; Talegeta, 2014). The concept of market innovation is considered an important ability of enterprises in domestic competition and improved their performance (Quaye and Mensah, 2019; Ren *et al.*, 2015).

Finally, firm profit is the revenue and profit generated for the company through services provided to customers (Sheth *et al.*, 2020). Although the for-profit company is clearly driven to produce profit and shareholder value, the profit is considered a more in-depth implementation of the purpose (George *et al.*, 2021).

4.4 The conceptual model of free-to-fee switch

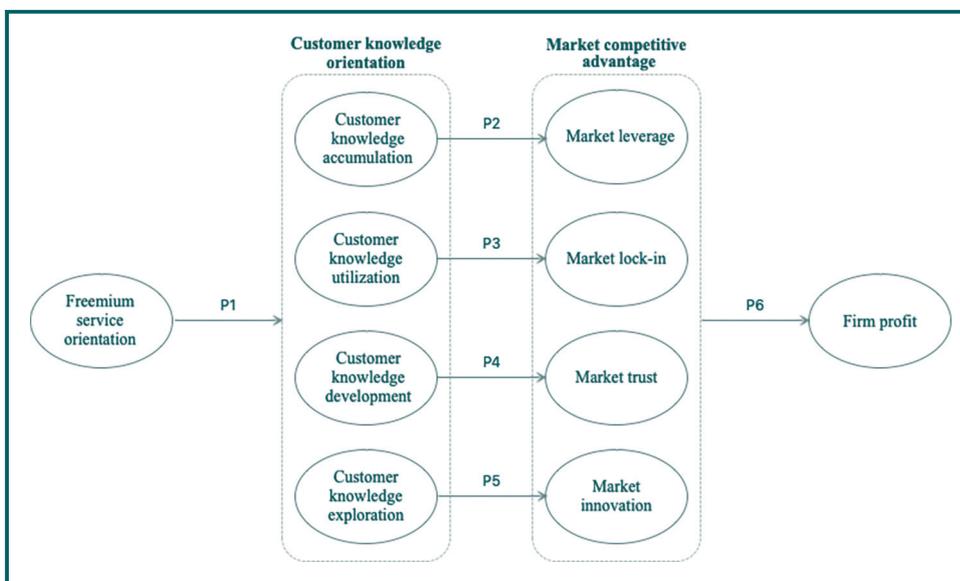
This research further proposed a conceptual model (Figure 3) to elaborate a clear picture of how to generate business model innovation of free-to-fee switch through customer knowledge orientation. In Figure 3, customer knowledge orientation shows a key effect between freemium service orientation and competitive advantage for companies.

Furthermore, there are six main propositions illustrating the relationships in Figure 2, which are named from “P1” to “P6” to show the relationships among different constructs. The following paragraphs will discuss in detail of the logic between different propositions and constructs. All these propositions are supported by the cases, in-depth interviews, secondary data (such as enterprise reports), theoretical derivations, etc. Therefore, the paper further proposes the following propositions:

Example such as iCloud, which provided freemium service of 5 GB initial storage space to customers. After attracting customers and forming user experience of habits and dependencies, iCloud provides service plan for fee. It forms a proposition of free service to customer utilization knowledge and the possibility for customers to use other competition service is relatively low because the switching cost is relatively high (UDN 3, 28–30). There are also existed evidence from previous literature to support P1. In addition to the cost of money, freemium service can reduce consumer psychological costs. Free services can improve the efficiency and effectiveness of customer operation processes, as well as reducing related risky activities (Mustak *et al.*, 2021). It is also found that free service is based on the use of existing expertise knowledge and capabilities to help customers optimize selected elements thereof. This study develops the dimensions of customer knowledge orientation based on multiple case studies and customer relationship management as well as customer knowledge management theories and gives a new conceptual definition of customer knowledge orientation in Section 4.3. Therefore, this study further summarizes the following propositions based on customer knowledge orientation:

P1. Freemium service orientation has positive impact on customer knowledge orientation.

Figure 3 The conceptual model of free-to-fee switch



Example such as Facebook (Meta), which provides a free mode to users, especially those living in poor countries. A variety of free services are provided such as sending instant messages, user message boards, activities and so on. When users are in free mode and trust data, they are using their carrier networks to be overwritten, even if these users are actually paid (RPD 5, 55–73). Evidence from the spokesperson of Facebook suggested that “Social media giants make people purchase data when watching Facebook, while user data is collected, Facebook’s free app will approve its customers to use the data they need” (ISE 5,12–16). Previous literature also proved that organizations could improve their knowledge assets from internal and external to external knowledge, and knowledge acquisition is a prerequisite for organizing new competitiveness (Durst and Runar Edvardsson, 2012; Zawaideh *et al.*, 2018). Therefore, the research proposed the following proposition:

P1a. Freemium service orientation has a positive impact on customer knowledge accumulation.

Example such as Google Workspace, it is free to use for 14 days, and after that, the user should pay for the monthly or yearly fees. There are groups of functions in Google Workspace, including Gmail, Google Drive, Meet, Docs, chatroom, etc., which form a unique system and convenient to use. After the 14 days for free, users may form a user habit and keep using it (SM-C 9, 11–24). Therefore, the research proposed the following proposition:

P1b. Freemium service orientation has a positive impact on customer knowledge utilization.

Example such as YouTube, founded in 2005, is a free video sharing platform. People can create and share videos in multi-disciplines, including music, movie, short-film, entertainment, education, etc. Free content may make people more willing to share their knowledge and video resources on YouTube. In addition, YouTube developed advertising, advertiser embedding advertisement based on the characteristics of different membership information and data such as age, zones and hobbies. People can watch the free content and click on advertisement according to their needs (ID-S 9, 18–25). CEO said in an interview, “YouTube is a system of large-scale knowledge sharing and educational source. YouTube has become a deep-rooted aspect of people in cautious content” (IDM 3, 8–15). However, few research discussed about the positive impact of freemium service on customer knowledge development. Existing research discussed the important role of customer knowledge development in the new service development process and its positive impact on service innovation performance (Johansson *et al.*, 2019). This study explained the conceptual definition of customer knowledge development in Section 4.3. The definition of customer knowledge development is defined as the development of the whole customer knowledge system. Therefore, the research proposed the following proposition:

P1c. Freemium service orientation has a positive impact on customer knowledge development.

Example such as Douban, its advantage lies in the long-term accumulation of users and data. In early 2012, Douban launched Douban Reader, which supports Web, Kindle and iPad platforms. Users are attracted to the Douban Reader with free articles. Through the exploration of the free mode with authors, Douban Reader store has become a platform for gathering readers and authors, and even developed into a mediator among publishers (RPD 10, 8–23). CEO of Douban, Yang Bo, said, “Attracting customers through free content such as Douban reading and Douban movies will provide a good foundation for the functional support of users’ payment channels in the later stage” (ISE 6, 18–37). Therefore, the research proposed the following proposition:

P1d. Freemium service orientation has a positive impact on customer knowledge exploration.

Example such as Tencent launched QQ with the function of online chat room and file transfer, which is free to use. To attract more users, Tencent sold virtual items such as stickers and background. After Tencent accumulated a huge amount of loyalty users, it started to launch QQ games and VIP services, which is needed to pay (OD-A 13, 68–75). A manager said in interviews that a large amount of member data is collected and formed into market flow capacity advantages (ISE 1, 12–31). Evidence from previous literature shows that based on customer information assets, customer insights or knowledge, becoming increasingly important as potential sources of competitive advantage (Varadarajan, 2020). Based on the perspective of resources, important keywords include competitive advantage, trading economy, etc., which develop the idea of knowledge as the company resources (Pereira and Bamel, 2021). The process capabilities of customer knowledge management are regulated the positive correlation and important relationships between organizational resources and strategic flexibility (Bamel, 2018). Therefore, the research proposed the following proposition:

P2. Customer knowledge accumulation has a positive impact on market leverage.

Example such as Google Drive, which provided users with free storage space at first. However, after Google Docs with multiple features and services are launched, a paid membership system with more storage space is offered to customers. Stable usage habit and the customer knowledge utilization is formed and increased customer loyalty (UDN 29, 52–68). A report shows that the customer's transition cost is relatively high in using other products, thereby forming market lock-in (RPD 11 37–49). There are also existed evidence from previous literature to support *P3*. To the best of our knowledge, knowledge utilization has a strong impact on organizational knowledge management performance (Zaim *et al.*, 2018). Transaction costs are operated as search costs, comparison costs and monitoring cost (Yu and Chen, 2018). Therefore, the research proposed the following proposition:

P3. Customer knowledge utilization has a positive impact on market lock-in.

Example such as Hulu, which offered free episodes on the website when it was created by US broadcasters. After operating its unique advertising and marketing model for several years, the free mode began to switch to the payment subscription model. Hulu created Oculus rooms, providing customers with VR applications and 360-degree-paid content in a virtual room. In this way, Hulu has developed its marketing rules and obtain customer trust (ID – S 2, 4–7). *P4* indicates that companies conduct free counseling and training to customers in the previous period and gain market trust in their post-construction system. Evidence from previous literature shows that trust establishes and enhances social capital of partners (Suseno and Ratten, 2007). Knowledge will actively affect the number of small and medium-sized enterprises, which in turn affects interpersonal trust (Petrakis and Kostis, 2012). Therefore, the research proposed the following proposition:

P4. Customer knowledge development has a positive impact on market trust.

Example such as Douban, which is a Chinese social network platform, providing “lifestyle and culture” products and services for younger generation. In the case of Douban, user data and preferences were collected through launching free services such as Douban Reader, Douban FM. Douban further explored more possible services by using this kind of user preference information. And finally, it will target the most profitable service for fee (PA-P 6, 14–19). However, after exploring various feasibility, Douban released paid innovative service “Douban Time” as the main revenue source and cut off a wide range of previous services (RPD 7, 23–32). There are also existed evidence from previous literature to support *P5*. The systemization of open innovation needs to balance knowledge exploration and knowledge exploitation to the contradiction of the company's commercialization, and there is a relationship among these variables (Amponsah and Adams, 2017). Previous research proposes and verifies the curve (inverted U) relationship between knowledge exploration and innovation (Katila and Ahuja, 2002; Luo *et al.*, 2018).

Inverted U curves extend to reverse S curve proposition, when the company's high level of knowledge exploration begins, innovation increases again (Luo *et al.*, 2018). Therefore, the research proposed the following proposition:

P5. Customer knowledge exploration has a positive impact on market innovation.

Example such as Line, which provides customer with communication function for free. After launch free stickers to attract customers for several years, it began to provide paid stickers with multiple family App and games. Line supports 17 languages and multi-platforms and is getting well known worldwide. Line gains the competitive advantage in the market, while profits a lot (RPD 98, 55–60). Evidence from previous literature shows that companies should focus on optimizing customer support functions, to gain competitive advantage, and transform from cost centers into strategic profit centers (Sheth *et al.*, 2020). Therefore, the research proposed the following proposition:

P6. Market competitive advantages has a positive impact on firm profit.

Examples such as Tencent, which released WeChat based on the user big data, which form the market leverage based previous product QQ, Tencent game, etc. It became the most popular messaging App in China. Based on the huge market assets formed in the past, WeChat can recommend channels, short video, and advertisement, thus gain more profit for the company (PIA 36, 24–45). The utility of competition strategies and market-based assets can assess the ability to improve competitive innovation and increase the profit for the company (Liu and Atuahene-Gima, 2018). Therefore, the research proposed the following proposition:

P6a. Market leverage has a positive impact on firm profit.

Example such as Hulu, one of the biggest video websites worldwide, locks users through creating a large original program with attractive content. Through this way, it generates more profit for the company (OD-A 14, 37–49). Lisa Holme said that the company believes that the original content is the performance of the “brand definition,” the license plan is to enable subscribers to enjoy in daily entertainment, which is critical to the success of Hulu (IDM 7, 2–3). Previous literature illustrates that efficient customer knowledge management is the basis of enterprises to expand customer knowledge to establish valuable customer relationships and strengthen customer loyalty (Chaithanapat and Rakthin, 2020). Therefore, the research proposed the following proposition:

P6b. Market lock-in has a positive impact on firm profit.

Examples such as iCloud users get used to the storage service Apple provided, which created a solid user trust phenomenon, as well as the user habit. Moreover, iCloud users may not change to another storage service from other companies, and in this way, Apple earns profit because of the market trust (UDN 3, 33–54). Previous studies are based on relationship marketing theory to explore the impact of trust and commitment on relationship results (Chen and Huan, 2020). In addition, market knowledge significantly and positively affects market performance (Chen and Huan, 2020). Through effective customer knowledge management and knowledge-oriented leadership, it will greatly improve company performance and create competitive advantage (Chaithanapat and Rakthin, 2020). Therefore, the research proposed the following proposition:

P6c. Market trust has a positive impact on firm profit.

Example such as Douban, it became a popular media review platform among young generation. Douban keep exploring innovative service in new market from the day it was founded. Douban is popular with Douban film review section and fan groups, which can consist of millions of members. Through market innovation, Douban can find profitable services for the company and further develops them (UDN 71, 142–186). Previous research has shown that manufacturing SMEs adopt marketing innovation as one of the main

innovations that transform products/services into firm profits (Soltani *et al.*, 2015; Quaye and Mensah, 2019). Therefore, the research proposed the following proposition:

P6d. Market innovation has a positive impact on firm profit.

4.5 Discussion

This study presents a multiple case study of free-to-fee switch of eight companies in three different digital subindustries, including social networks, cloud services and video industry, each of which has its focus of innovative business models, and accordingly, they can be classified into three categories. First, cloud service industry may focus on the “Honey Poison Model” because companies in this industry such as Apple company launches free service of iCloud storage space as the honey, and then it will combine multiple free functions to attract more consumers and finally, user habit is formed, and customers would like to pay for more iCloud storage space. Second, the video industry may focus on the “The Voluntary Model” because companies such as YouTube originally provided free existing service such as sharing the video content for free to attract customers who are interest in it, and then expanding service items to launch multiple services for fee for consumers to purchase. However, the typology of one industry focuses only one innovative business model may not always be the case. For example, in the social network industry, cases of Tencent and Meta belong to “The Leverage Model,” while Douban aims at “The Shelling Model,” and Line belongs to “The Voluntary Model.” The reason behind it may be that the situation of this industry is more complicated, and it is not easy to be summarized.

With the development of previous theory, the deficiencies in the development of price services have been discovered. By integrating the concept of fairness price theory and cannibalization, research reveals the impact of free-to-fee switch on sense of fairness, attitude and purchase intention to the company, which may be partially weakened due to freemium switches (Cziehso *et al.*, 2019). Diller (2008) proposed a fair price model, describing seven components of fair prices: allocating fairness, consistent behaviors, personal respect and attention to partners, fair transactions, honest prices, price reliability and co-determined influence/rights. Procedural fairness and distributive fairness are found to interact to achieve overall price fairness (Ferguson *et al.*, 2013). Dynamic pricing can effectively extract consumers’ surplus and improve the company’s profitability, which will also arouse consumer unfairness perception (Li *et al.*, 2018). Research of Li *et al.* (2018) has shown that dynamic bundling can reduce unfairness and increase price fairness perceptions.

Furthermore, this study proposed the organizational ambidexterity and its parallelism to define the dimensionality of customer knowledge orientation according to customer knowledge exploration and customer knowledge exploitation. Organizational ambidexterity refers to simultaneously pursuing exploration and exploitation (He and Wong, 2004). Exploitation refers to the improvement and extension of an existing technological base, while exploration focuses on developing a new technological base (March, 1991; He and Wong, 2004; Cao *et al.*, 2009). Exploration and exploitation are considered as two fundamentally different types of organizational learning (He and Wong, 2004; March, 1991). Exploration and exploitation form a paradox that has gained prominence in ambidextrous research to identify ways to deal with this paradox (Katila and Ahuja, 2002; He and Wong, 2004; Wei *et al.*, 2013). Moreover, combining exploration and exploitation in knowledge learning may result in a high rate of product innovation (Katila and Ahuja, 2002).

Observing Figure 2, customer knowledge orientation can be concisely categorized as customer knowledge exploration and customer knowledge exploitation, concerning customer knowledge accumulation, utilization and development. Moreover, the logic behind customer knowledge exploration and customer knowledge development is quite different. Customer knowledge exploration mainly focuses on trying to launch free service to

test the market without knowing customer demand and any customer knowledge. However, customer knowledge development aims to develop customer knowledge and based on customer demand to launch services.

5. Conclusion

Based on multiple case study of free-to-fee switch, the study obtains four innovative service models, generates strategic matrix for business model innovation of free-to-fee switch and investigates how customer knowledge orientation acts as a key to the business model innovation of free-to-fee switch.

There are mainly three theoretical contributions. First, previous literatures rarely study the customer knowledge orientation in analyzing free-to-fee switch. They mainly focus on the pricing introduction (Faugère and Tayi, 2007) and price fairness (Bruno *et al.*, 2012), the profitability of moving from free to fee (Pauwels and Weiss, 2008), internal and external service growth challenges (Parida *et al.*, 2014; Mustak *et al.*, 2021), customer psychological mechanisms (Lambrecht and Misra, 2017; Cziehso *et al.*, 2019) and strategies for creating business model innovation for the free-to-fee switch (Witell and Löfgren, 2013). The strategic matrix of this study extends the previous literature, in particular filling the research gap that lacks innovative strategies for free-to-fee switch to change business models. Based on the customer knowledge orientation, this study provides more details on how the switching paths operate across different types of free services (existing and multiple services). Second, although there exist previous studies on the propositions from the customer knowledge orientation to market competitive advantages, more detailed research remains insufficient. The conceptualization of customer knowledge orientation, which is considered a key conceptual contribution to the customer knowledge management research field. This study provides eight detailed constructs for customer knowledge orientation and market competitive advantage and discussed in detail on the free-to-fee switch. Third, for the six main propositions and a total of 12 sub-propositions proposed in the conceptual model of free-to-fee switch, even if they are supported by similar research evidence in previous literatures, most of them are not consistent with our findings. Therefore, it can be divided into three categories to illustrate:

1. the model has clear support evidence from previous literature, which is consistent with our findings, including *P2* (Varadarajan, 2020), *P5* (Katila and Ahuja, 2002; Luo *et al.*, 2018), *P6* (Sheth *et al.*, 2020), *P6a* and *P6d* (Liu and Atuahene-Gima, 2018);
2. there are similar studies in the previous literature, and some cases have similar research evidence but are not completely consistent, including *P1* (Mustak *et al.*, 2021), *P1a* (Durst and Runar Edvardsson, 2012; Zawaideh *et al.*, 2018), *P1c* (Johansson *et al.*, 2019), *P3* (Zaim *et al.*, 2018), *P4* (Petraakis and Kostis, 2012), *P6b* (Chaithanapat and Rakthin, 2020) and *P6c* (Chen and Huan, 2020; Chaithanapat and Rakthin, 2020); and
3. no similar literature has been found so far, including *P1b* and *P1d*.

The study contributes in the way to adopt the specific mechanism and integrate conceptualization of customer knowledge orientation to further carry out free-to-fee switch. Enterprises attract customers by offering freemium services, but the real purpose is letting customers or third-party organizations to pay for the premium services. Among of the four models, the “The Leverage Model” emphasizes unit of payment is not a customer but a third-party organization. For those who prefer a third-party organization to pay for the service, although the customer does not pay it directly, they provide some information that the third-party organization needs, such as user behavior and personal data.

This study is based on the analysis of three sub industries in the digital convergence, but it does not focus on the traditional entity enterprises. There may be some differences between

digital convergence and physical enterprises. For example, the cost of software services is lower, while the cost of heavy asset might be higher. Although this study analyzes the innovative business model of free-to-fee switch, the profit logic of third-party organizations needs to be discussed more in detail for the future research. In addition, based on rigorous research considerations, future research can collect more case data for different industries to illustrate whether there are any other evolutionary paths and corporate profitability logics.

References

- Abdalla, M., Oliveira, L., Azevedo, C. and Gonzalez, R. (2018), "Quality in qualitative organizational research: types of triangulation as a methodological alternative", *Administração: Ensino e Pesquisa*, Vol. 19 No. 1, pp. 66-98.
- Aghamirian, B., Dorri, B. and Aghamirian, B. (2015), "Customer knowledge management. Application in gaining organization's competitive advantage in electronic commerce", *Journal of Theoretical and Applied Electronic Commerce Research*, Vol. 10 No. 1, pp. 63-78.
- Al-Debei, M. and Avison, D. (2010), "Developing a unified framework of the business model concept", *European Journal of Information Systems*, Vol. 19 No. 3, pp. 359-376.
- Ali, A., Al-Aali, A. and Al-Owaidan, A. (2013), "Islamic perspectives on profit. Maximization", *Journal of Business Ethics*, Vol. 117 No. 3, pp. 467-475.
- Amponsah, C. and Adams, S. (2017), "Open innovation: systematization of knowledge exploration and exploitation for commercialization", *International Journal of Innovation Management*, Vol. 21 No. 3, pp. 14-32.
- Anderson, C. (2009), *Free: The Future of a Radical Price*, Hyperion, New York, NY.
- Awuzie, B. and McDermott, P. (2017), "An abductive approach to qualitative built environment research", *Qualitative Research Journal*, Vol. 17 No. 4, pp. 356-372.
- Bamel, U. and Bamel, N. (2018), "Organizational resources, KM process capability and strategic flexibility: a dynamic resource-capability perspective", *Journal of Knowledge Management*, Vol. 22 No. 7, pp. 1555-1572.
- Barry, J. and Terry, T. (2008), "Empirical study of relationship value in industrial services", *Journal of Business & Industrial Marketing*, Vol. 23 No. 4, pp. 228-241.
- Bashir, M., Naqshbandi, M.M. and Farooq, R. (2020), "Business model innovation: a systematic review and future research directions", *International Journal of Innovation Science*, Vol. 12 No. 4, pp. 457-476.
- Belkahl, W. and Triki, A. (2011), "Customer knowledge enabled innovation capability: proposing a measurement scale", *Journal of Knowledge Management*, Vol. 15 No. 4, pp. 648-674.
- Bellman, R., Clark, C., Malcolm, D., Craft, C. and Ricciardi, F. (1957), "On the construction of a multi-stage, multi-person business game", *Operations Research*, Vol. 5 No. 4, pp. 469-503.
- Brandt, P. and Timmermans, S. (2021), "Abductive logic of inquiry for quantitative research in the digital age", *Sociological Science*, Vol. 8, pp. 191-210.
- Brown, T. (2017), "Sensor-based entrepreneurship: a framework for developing new products and services", *Business Horizons*, Vol. 60 No. 6, pp. 819-830.
- Bruno, H., Che, H. and Dutta, S. (2012), "Role of reference price on price and quantity: insights from business-to-business markets", *Journal of Marketing Research*, Vol. 49 No. 5, pp. 640-654.
- Bryman, A. and Bell, E. (2011), *Business Research Methods*, Oxford Univ. Press, Oxford.
- Brynjolfsson, E. and Collis, A. (2019), "How should we measure the digital economy?", *Harvard Business Review*, Vol. 97 No. 6, pp. 140-148.
- Buganza, T., Trabucchi, D. and Pellizzoni, E. (2019), "Limitless personalisation: the role of big data in unveiling service opportunities", *Technology Analysis & Strategic Management*, Vol. 32 No. 1, pp. 58-70.
- Cao, Q., Gedajlovic, E. and Zhang, H. (2009), "Unpacking organizational ambidexterity: dimensions, contingencies, and synergistic effects", *Organization Science*, Vol. 20 No. 4, pp. 781-796.

- Chaithanapat, P. and Rakthin, S. (2020), "Customer knowledge management in SMEs: review and research agenda", *Knowledge and Process Management*, Vol. 28 No. 1, pp. 71-89.
- Chen, K.-Y. and Huan, T.-C. (2020), "Facilitating weaker firms' market knowledge in asymmetric B2B relationship from structure, process, and strategy aspects – a case of travel industry", *Journal of Knowledge Management*, Vol. 24 No. 3, pp. 697-716.
- Chen, J., Wang, L. and Qu, G. (2020), "Explicating the business model from a knowledge-based view: nature, structure, imitability and competitive advantage erosion", *Journal of Knowledge Management*, Vol. 25 No. 1, pp. 23-47.
- Choi, G. and Storr, V. (2020), "Market interactions, trust and reciprocity", *Plos One*, Vol. 15 No. 5, p. e0232704.
- Conaty, F. (2021), "Abduction as a methodological approach to case study research in management accounting – an illustrative case", *Accounting, Finance & Governance Review*, Vol. 27 No. 1, pp. 21-35.
- Cziehso, G.P., Schaefer, T. and Kukar-Kinney, M. (2019), "Free no more – investigating customer reactions to unexpected free-to-fee switches", *Journal of Business Research*, Vol. 101 No. 6, pp. 229-242.
- DaSilva, C.M. and Trkman, P. (2013), "Business model: what it is and what it is not", *Long Range Planning*, Vol. 47 No. 6, pp. 379-389.
- de Oliveira, D. and Cortimiglia, M. (2017), "Value co-creation in web-based multisided platforms: a conceptual framework and implications for business model design", *Business Horizons*, Vol. 60 No. 6, pp. 747-758.
- Diller, H. (2008), "Price fairness", *Journal of Product & Brand Management*, Vol. 17 No. 5, pp. 353-355.
- Dubois, A. and Gadde, L. (2002), "Systematic combining: an abductive approach to case research", *Journal of Business Research*, Vol. 55 No. 7, pp. 553-560.
- Durst, S. and Runar Edvardsson, I. (2012), "Knowledge management in SMEs: a literature review", *Journal of Knowledge Management*, Vol. 16 No. 6, pp. 879-903.
- Faugère, C. and Tayi, G.K. (2007), "Designing free software samples: a game theoretic approach", *Information Technology and Management*, Vol. 8 No. 4, pp. 263-278.
- Ferguson, J., Ellen, P. and Bearden, W. (2013), "Procedural and distributive fairness: determinants of overall price fairness", *Journal of Business Ethics*, Vol. 121 No. 2, pp. 217-231.
- Fidel, P., Schlesinger, W. and Emilo, E. (2018), "Effects of customer knowledge management and customer orientation on innovation capacity and marketing results in SMEs: the mediating role of innovation orientation", *International Journal of Innovation Management*, Vol. 22 No. 7, pp. 1-26.
- Fliess, S. and Volkers, M. (2019), "Trapped in a service encounter", *Journal of Service Management*, Vol. 31 No. 1, pp. 79-114.
- Fliess, S., Dyck, S. and Schmelter, M. (2014), "Mirror, mirror on the wall – how customers perceive their contribution to service provision", *Journal of Service Management*, Vol. 25 No. 4, pp. 433-469.
- Foss, N.J. and Saebi, T. (2017), "Fifteen years of research on business model innovation", *Journal of Management*, Vol. 43 No. 1, pp. 200-227.
- Fox, W. and Denzin, N. (1979), "The research act: a theoretical introduction to sociological methods", *Contemporary Sociology*, Vol. 8 No. 5, p. 750.
- Fusch, P., Fusch, G. and Ness, L. (2018), "Denzin's paradigm shift: revisiting triangulation in qualitative research", *Journal of Social Change*, Vol. 10 No. 1, p. 2, pp. 19-32.
- Gebert, H., Geib, M., Kolbe, L. and Brenner, W. (2003), "Knowledge-enabled customer relationship management: integrating customer relationship management and knowledge management concepts", *Journal of Knowledge Management*, Vol. 7 No. 5, pp. 107-123.
- George, G., Haas, M., McGahan, A., Schillebeeckx, S. and Tracey, P. (2021), "Purpose in the for-profit firm: a review and framework for management research", *Journal of Management*, available at: <https://doi.org/10.1177/01492063211006450> (accessed 15 April 2021).
- Gu, X., Kannan, P.K. and Ma, L. (2018), "Selling the premium in freemium", *Journal of Marketing*, Vol. 82 No. 6, pp. 10-27.

- He, Z. and Wong, P. (2004), "Exploration vs. Exploitation: an empirical test of the ambidexterity hypothesis", *Organization Science*, Vol. 15 No. 4, pp. 481-494.
- Järvensivu, T. and Törnroos, J. (2010), "Case study research with moderate constructionism: conceptualization and practical illustration", *Industrial Marketing Management*, Vol. 39 No. 1, pp. 100-108.
- Johansson, A., Raddats, C. and Witell, L. (2019), "The role of customer knowledge development for incremental and radical service innovation in servitized manufacturers", *Journal of Business Research*, Vol. 98, pp. 328-338.
- Katila, R. and Ahuja, G. (2002), "Something old, something new: a longitudinal study of search behavior and new product introduction", *Academy of Management Journal*, Vol. 45 No. 6, pp. 1183-1194.
- Khosravi, A. and Hussin, A.R.C. (2018), "Customer knowledge management antecedent factors: a systematic literature review", *Knowledge and Process Management*, Vol. 25 No. 1, pp. 12-30.
- Kraus, S., Filser, M., Puumalainen, K., Kailer, N. and Thurner, S. (2020), "Business model innovation: a systematic literature review", *International Journal of Innovation and Technology Management*, Vol. 17 No. 6, pp. 1-20.
- Lambrecht, A. and Misra, K. (2017), "Fee or free: when should firms charge for online content?", *Management Science*, Vol. 63 No. 4, pp. 1150-1165.
- Lashgari, M., Sutton-Brady, C., Solberg Søilen, K. and Ulfvengren, P. (2018), "Adoption strategies of social media in B2B firms: a multiple case study approach", *Journal of Business & Industrial Marketing*, Vol. 33 No. 5, pp. 730-743.
- Li, W., Hardesty, D. and Craig, A. (2018), "The impact of dynamic bundling on price fairness perceptions", *Journal of Retailing and Consumer Services*, Vol. 40, pp. 204-212.
- Liew, C. (2008), "Strategic integration of knowledge management and customer relationship management", *Journal of Knowledge Management*, Vol. 12 No. 4, pp. 131-146.
- Liozu, S. and Hinterhuber, A. (2013), "Pricing orientation, pricing capabilities, and firm performance", *Management Decision*, Vol. 51 No. 3, pp. 594-614.
- Lipscomb, M. (2012), "Abductive reasoning and qualitative research", *Nursing Philosophy*, Vol. 13 No. 4, pp. 244-256.
- Liu, W. (2006), "Knowledge exploitation, knowledge exploration, and competency trap", *Knowledge and Process Management*, Vol. 13 No. 3, pp. 144-161.
- Liu, W. and Atuahene-Gima, K. (2018), "Enhancing product innovation performance in a dysfunctional competitive environment: the roles of competitive strategies and market-based assets", *Industrial Marketing Management*, Vol. 73 No. 2, pp. 7-20.
- Lovelock, C.H. (1980), "Towards a classification of services", *Theoretical Developments in Marketing*, Vol. 72 No. 6, pp. 72-76.
- Lovelock, C.H. (1983), "Classifying services to gain strategic marketing insights", *Journal of Marketing*, Vol. 47 No. 3, pp. 9-20.
- Luo, B., Lui, S., Liu, C. and Zhang, R. (2018), "Knowledge exploration and innovation: a review and an inverse S-curve proposition", *Journal of Management & Organization*, Vol. 24 No. 6, pp. 870-892.
- Magretta, J. (2002), "Why business models matter", *Harvard Business Review*, Vol. 80 No. 5, pp. 86-92.
- March, J. (1991), "Exploration and exploitation in organizational learning", *Organization Science*, Vol. 2 No. 1, pp. 71-87.
- Maury, B. (2018), "Sustainable competitive advantage and profitability persistence: sources versus outcomes for assessing advantage", *Journal of Business Research*, Vol. 84, pp. 100-113.
- Misztal, B. (1996), *Trust in Modern Society*, Polity Press, Cambridge, MA.
- Mohd Ishak, N. and Abu Bakar, A. (2014), "Developing sampling frame for case study: challenges and conditions", *World Journal of Education*, Vol. 4 No. 3, pp. 29-35.
- Monteiro, G. and Foss, N. (2018), "Resources and market definition: rethinking the 'hypothetical monopolist' from a resource-based perspective", *Managerial and Decision Economics*, Vol. 39 No. 3, pp. 346-353.
- Mustak, M., Ulaga, W., Grohmann, M. and von Wangenheim, F. (2021), "Free-to-fee transformation of industrial services", *Journal of Service Research*, available at: <https://doi.org/10.1177/10946705211044022> (accessed 11 December 2021).

- Onwumere, J. and Ozioma-Eleodinmuo, P. (2015), "Enhancing innovativeness among small and medium scale (SMEs) leather enterprises to boost performance in Abia state, Nigeria", *International Journal of Community and Cooperative Studies*, Vol. 3 No. 1, pp. 1-4.
- Parida, V., Sjödin, D.R., Wincent, J. and Kohtamäki, M. (2014), "Mastering the transition to product-service provision: insights into business models, learning activities, and capabilities", *Research-Technology Management*, Vol. 57 No. 3, pp. 44-52.
- Pattabhiramaiah, A., Sriram, S. and Manchanda, P. (2018), "Paywalls: monetizing. Online content", *Journal of Marketing*, Vol. 83 No. 2, pp. 19-36.
- Pauwels, K. and Weiss, A. (2008), "Moving from free to fee: how online firms market to change their business model successfully", *Journal of Marketing*, Vol. 72 No. 3, pp. 14-31.
- Pereira, V. and Bamel, U. (2021), "Extending the resource and knowledge based view: a critical analysis into its theoretical evolution and future research directions", *Journal of Business Research*, Vol. 132, pp. 557-570.
- Petrakis, P. and Kostis, P. (2012), "The role of knowledge and trust in SMEs", *Journal of the Knowledge Economy*, Vol. 6 No. 1, pp. 105-124.
- Quaye, D. and Mensah, I. (2019), "Marketing innovation and sustainable competitive advantage of manufacturing SMEs in Ghana", *Management Decision*, Vol. 57 No. 7, pp. 1535-1553.
- Rabetino, R., Kohtamäki, M., Lehtonen, H. and Kostama, H. (2015), "Developing the concept of life-cycle service offering", *Industrial Marketing Management*, Vol. 49, pp. 53-66.
- Ragab, M. and A.F., Arisha, A. (2013), "Knowledge management and measurement: a critical review", *Journal of Knowledge Management*, Vol. 17 No. 6, pp. 873-901.
- Ramdani, B., Binsarif, A. and Boukrami, E. (2019), "Business model innovation: a review and research agenda", *New England Journal of Entrepreneurship*, Vol. 22 No. 2, pp. 89-108.
- Rashid, Y., Rashid, A., Warraich, M., Sabir, S. and Waseem, A. (2019), "Case study method: a step-by-step guide for business researchers", *International Journal of Qualitative Methods*, Vol. 18, pp. 1-13.
- Ren, S., Eisingerich, A.B. and Tsai, H.T. (2015), "How do marketing, research and development capabilities, and degree of internationalization synergistically affect the innovation performance of small and medium-sized enterprises (SMEs)? A panel data study of Chinese SMEs", *International Business Review*, Vol. 24 No. 4, pp. 642-651.
- Rowley, J. (2002), "Eight questions for customer knowledge management in e-business", *Journal of Knowledge Management*, Vol. 6 No. 5, pp. 500-511.
- Sadowski, J. (2019), "When data is capital: datafication, accumulation, and extraction", *Big Data & Society*, Vol. 6 No. 1, pp. 1-12.
- Santoro, G. and Usai, A. (2018), "Knowledge exploration and ICT knowledge exploitation through human resource management", *Management Research Review*, Vol. 41 No. 6, pp. 701-715.
- Schneider, S. and Spieth, P. (2013), "Business model innovation: towards an integrated future research agenda", *International Journal of Innovation Management*, Vol. 17 No. 1, p. 1340001.
- Sheth, J., Jain, V. and Ambika, A. (2020), "Repositioning the customer support services: the next frontier of competitive advantage", *European Journal of Marketing*, Vol. 54 No. 7, pp. 1787-1804.
- Soltani, S., Azadi, H., Hosseini, S., Witlox, F. and Passel, S. (2015), "Marketing innovation in rural small food industries in Iran", *Journal of Food Products Marketing*, Vol. 21 No. 5, pp. 533-551.
- Storey, C. and Larbig, C. (2018), "Absorbing customer knowledge: how customer involvement enables service design success", *Journal of Service Research*, Vol. 21 No. 1, pp. 101-118.
- Suseno, Y. and Ratten, V. (2007), "A theoretical framework of alliance performance: the role of trust, social capital and knowledge development", *Journal of Management & Organization*, Vol. 13 No. 1, pp. 4-23.
- Taghizadeh, S., Rahman, S. and Hossain, M. (2018), "Knowledge from customer, for customer or about customer: which triggers innovation capability the most?", *Journal of Knowledge Management*, Vol. 22 No. 1, pp. 162-182.
- Taherparvar, N., Esmailpour, R. and Dostar, M. (2014), "Customer knowledge management, innovation capability and business performance: a case study of the banking industry", *Journal of Knowledge Management*, Vol. 18 No. 3, pp. 591-610.

- Talegeta, S. (2014), "Innovation and barriers to innovation: small and medium enterprises in Addis Ababa", *Journal of Small Business and Entrepreneurship Development*, Vol. 2 No. 1, pp. 83-106.
- Teece, D. (2010), "Business models, business strategy and innovation", *Long Range Planning*, Vol. 43 Nos 2/3, pp. 172-194.
- Timmermans, S. and Tavory, I. (2012), "Theory construction in qualitative research", *Sociological Theory*, Vol. 30 No. 3, pp. 167-186.
- Trabucchi, D. and Buganza, T. (2019), "Data-driven innovation: switching the perspective on big data", *European Journal of Innovation Management*, Vol. 22 No. 1, pp. 23-40.
- Trabucchi, D., Buganza, T. and Pellizzoni, E. (2017), "Give away your digital services: leveraging big data to capture value", *Research-Technology Management*, Vol. 60 No. 2, pp. 43-52.
- Uлага, W. and Michel, S. (2018), "Bill it, kill it, or keep it free?", *MIT Sloan Management Review*, Vol. 60 No. 1, pp. 1-8.
- Uлага, W. and Reinartz, W.J. (2011), "Hybrid offerings: how manufacturing firms combine goods and services successfully", *Journal of Marketing*, Vol. 75 No. 6, pp. 5-23.
- van der Valk, W. and Axelsson, B. (2015), "Towards a managerially useful approach to classifying services", *Journal of Purchasing and Supply Management*, Vol. 21 No. 2, pp. 113-124.
- Varadarajan, R. (2020), "Customer information resources advantage, marketing strategy and business performance: a market resources based view", *Industrial Marketing Management*, Vol. 89, pp. 89-97.
- Vishjic, I. and Van Looy, B. (2013), "Servitization: disentangling the impact of service business model innovation on manufacturing firm performance", *Journal of Operations Management*, Vol. 31 No. 4, pp. 169-180.
- Wagner, T.M., Benlian, A. and Hess, T. (2014), "Converting freemium customers from free to premium – the role of the perceived premium fit in the case of music as a service", *Electronic Markets*, Vol. 24 No. 4, pp. 259-68.
- Wei, Z., Yi, Y. and Guo, H. (2013), "Organizational learning ambidexterity, strategic flexibility, and new product development", *Journal of Product Innovation Management*, Vol. 31 No. 4, pp. 832-847.
- Witell, L. and Löfgren, M. (2013), "From service for free to service for fee: business model innovation in manufacturing firms", *Journal of Service Management*, Vol. 24 No. 5, pp. 520-533.
- Yin, R.K. (2014), *Case Study Research: Design and Methods*, 5th ed., SAGE Publications, Thousand Oaks CA, available at: <https://doi.org/10.3138/cjpe.30.1.108> (accessed 19 September 2021).
- Yu, T.-W. and Chen, T.-J. (2018), "Online travel insurance purchase intention: a transaction cost perspective", *Journal of Travel & Tourism Marketing*, Vol. 35 No. 9, pp. 1175-1186.
- Zaim, H., Muhammed, S. and Tarim, M. (2018), "Relationship between knowledge management processes and performance: critical role of knowledge utilization in organizations", *Knowledge Management Research & Practice*, Vol. 17 No. 1, pp. 24-38.
- Zawaideh, F., Al-Zoubi, M., Abualoush, S., Kanaan, R. and Masa'deh, R. (2018), "The impact of knowledge documentation process as an intermediary variable among knowledge acquisition process, organizational culture and human capital", *Modern Applied Science*, Vol. 12 No. 11, pp. 151-168.
- Zott, C. and Amit, R. (2007), "Business model design and the performance of entrepreneurial firms", *Organization Science*, Vol. 18 No. 2, pp. 181-199.
- Zott, C. and Amit, R. (2010), "Business model design: an activity system perspective", *Long Range Planning*, Vol. 43 Nos 2/3, pp. 216-226.
- Zott, C., Amit, R. and Massa, L. (2011), "The business model: recent developments and future research", *Journal of Management*, Vol. 37 No. 4, pp. 1019-1042.

Further reading

- Carlos Toledo, J., Fernando Martins, M. and Valio Dominguez Gonzalez, R. (2014), "Managing knowledge in a service provider: a network structure-based model", *Journal of Knowledge Management*, Vol. 18 No. 3, pp. 611-30.
- Farquhar, J., Michels, N. and Robson, J. (2020), "Triangulation in industrial qualitative case study research: widening the scope", *Industrial Marketing Management*, Vol. 87, pp. 160-170.

Appendix

Interview Guide

Date: _____	Interview Length: _____
Interviewer: _____	Interviewee: _____

Introduction - Illustrating the purpose and background of research

[Briefly describe who you are and the affiliation. Describe the background of the interview, the general purpose, explain some definitions such as free-to-fee switch and how long the interview will take. Explain how the collected data will be used. Help the interviewee explain from which perspective the questions should be answered. Outline confidentiality and how it will maintain confidentiality.]

Interview Template

Category	Main Topics	Support Questions
Senior Executives	1. What kind of free-to-fee services have ever been proposed in your department or company?	- Do you think it is efficient, why? - How it switches from free to fee?
	2. How do you feel about conducting BMI strategies in your company?	- Can you explain in detail? - Do you think it is necessary, why?
	3. What do you think is the key to conduct the BMI of free-to-fee switch?	- Talk more about difficulties you came across during the switch - Do you feel CK is a factor? why?
Board Members	1. Explain the BMI of free-to-fee switch proposed in you company	- How the switch works? can you evaluate it? - Do you think it is necessary and why?
	2. What is the aim to conduct the BMI of free-to-fee switch?	- How do you feel the strategies of BMI conducted in your company? - Do you think it is efficient and why?
	3. What might be the key to conduct BMI of free-to-fee switch?	- Do you feel CK is a key? Why? - Any advice regarding the free-to-fee switch in your industry?

* More questions or additional information can be recorded in the extra pages.

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