Why is digital disruption being accepted by consumers?

-A comparative study of Demae and Food Delivery Service (FDS) -

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Abstract

Why is Digital Disruption accepted and being spread? Digital disruption is a new concept that has not been fully discussed in the field of innovation. The term is defined as a status in which digital disruptive innovation changes existing business models and destabilizes the conventional business environment. In order to elucidate the factors promoting digital disruption from consumers' perspective, our study conducted an empirical comparative study with food delivery service (FDS) and Demae service, using the technical acceptance model (TAM). As a result, we figured out the consumers' values which put more emphasis on time and money than on hedonic motivation, and a change in consumer's perception of risk. In Particular, we proposed that risk is a compatible concept against a cost-effective trade-off. Our study sheds light on the new and increasing phenomenon of our era, digital disruption, and contributes to the understanding of the dynamics of digital disruption from the consumer's view.

Key words:

Digital Disruption, Food delivery service, Demae service,

Technology Acceptance Model (TAM), Consumer perspective

Table of contents

1. INTRODUCTION

In recent years, with the development of digitalization and IT technology, various products and services are provided, utilizing existing platforms such as the Internet and smartphones, without huge initial investments. This phenomenon of entering an existing market with IT tools and existing digital platforms and having an impact that displaces existing players is generally referred to as *digital disruption*. For example of digital disruption, major retailers have been replaced and seriously affected by online shopping services represented by Amazon. In addition, major video rental and DVD chains are also being replaced and badly affected by online video distribution services such as Netflix (Ministry of Internal Affairs and Communications, 2021).

Why are the new services that triggered digital disruption being rapidly accepted by consumers even though the existing services were already used widely? How is digital disruption embraced by consumers? There is an ongoing digital disruption now in so called food delivery service (FDS, hereafter). In the past few years, FDS such as Uber Eats and Foodpanda have been rapidly growing and expanding, replacing the traditionally popular and similar service, generally called "Demae" in Japan. Therefore, this study approaches digital disruption with a focus on the food delivery industry.

Some previous studies on digital disruption have attempted to systematize the concept, theory, and history of it (Baiyere, 2020 : Gilbert, 2015 : Tham, 2016), and others have tried to elucidate digital disruption from a corporate perspective based on

secondary data from firms (Gilbert 2015：Tham, 2016). However, to the best of our knowledge, there have been little studies that focus on the consumers' perspective of the phenomenon, focusing on consumer acceptance of digital disruptors. Furthermore, there is no previous research that has conducted a comparative analysis of consumer acceptance factors of services before and after a digital disruption (old and new business model). As we live in a digital society where digitalization is being promoted in many fields, we need to shed light on what factors cause digital disruption from the consumer's perspective to better understand the phenomenon.

In this study, we conducted a comparative analysis of Demae and FDS, focusing on what specific factors influence consumers' acceptance of services when digital disruption is being accepted by consumers. Applying a quantitative approach, we conducted a questionnaire survey, and used the new technology acceptance model (TAM, hereafter) as the research model for analysis. By comparing the factors that promote consumer acceptance of FDS and Demae with TAM, the differences in the factors that promote consumer acceptance before and after digital disruption were examined.

In consequence of our study, we found that *price-saving* and *time-saving orientation* had a greater effect on behavioral intention in FDS than in Demae, while unexpectedly, *hedonic motivation* had a smaller effect. As for *perceived risk*, we found no causal relationship between perceived risk and behavioral intention in the case of Demae, but there is a positive effect on behavioral intention in the case of FDS. We concluded that

hedonic motivation is not necessarily a driver of consumers' behavioral intention in the promotion of digital disruption, although previous studies have shown that hedonic motivation has a positive effect on consumers' behavioral intention. We also concluded that perceived risk, which is traditionally regarded as a disincentive to behavioral intention, can be explained as one of the positive factors of behavioral intention in the progress of digital disruption.

In the remainder of this paper, next, we review the previous studies on digital disruption and TAM to clarify the issues in Chapter 2. In Chapter 3 and 4, we explain specific research models and methods, and then, show results in Chapter 5. Finally, we discuss implications of our findings and limitations that need to be addressed in further studies.

2. LITERATURE REVIEW

Digital disruption is a new phenomenon and concept, thus not much studies have accumulated so far. First, speaking of digital disruption, the researchers state two different opinions on the cause of digital disruption. Tham (2016) explained that digital disruption occurs because of disruptive innovation, taking Airbnb as an example (Tham, 2016; 393-407). On the contrary, Baiyere (2020) pointed out that digital innovation causes digital disruption in his paper (Baiyere, 2020), and the majority of researchers support this statement (Knickrehm et al., 2016 : Vives, 2019 : Skog et al., 2018). In the

first place, traditionally, speaking of disruption, Christesen (1996) proposes that disruptive innovation happens to enterprises following the voices of the beneficial customers (Christensen, 1996). Furthermore, Christensen (2013) argues that Uber is not an example of disruptive innovation because Uber did not make a new market and not challenge the low-end users (Christensen, 2013). In the case of FDS such as Uber Eats and DoorDash, it seems to be categorized as disruptive innovation because the FDS industry has made up the market, in which people who never used the previous food delivery services install and use the new FDS apps. Therefore, in this paper, we define digital disruptive innovation as the cause of digital disruption. Furthermore, the definition of digital disruption is still controversial. Knickrehm (2016) mentioned that digital disruption is exploited by digital technology's potential and has brought the tech companies enormous profits (Knickrehm, 2016). Skog et al. (2018) said digital disruption is considered as a phenomenon originating in firm-level processes subsequently affecting industries (Skog et al., 2018). Also, Stonehouse & Konina (2020) pointed out that digital disruption is regarded as a lack of stability and turbulence in the business environment caused by digital innovation that leads to the erosion of firm boundaries and previous basic rules for organizing the production and capture of value (Stonehouse & Konina, 2020). Returning to the context of FDS, FDS have taken over the conventional Demae market recently. This fact of digital disruption is also true for even other situations or markets. Therefore, in this paper, we define digital disruption as a status which is

7

transforming the existing business, and in turn, is driving the business environment to commercial instability because of lack of firm boundaries.
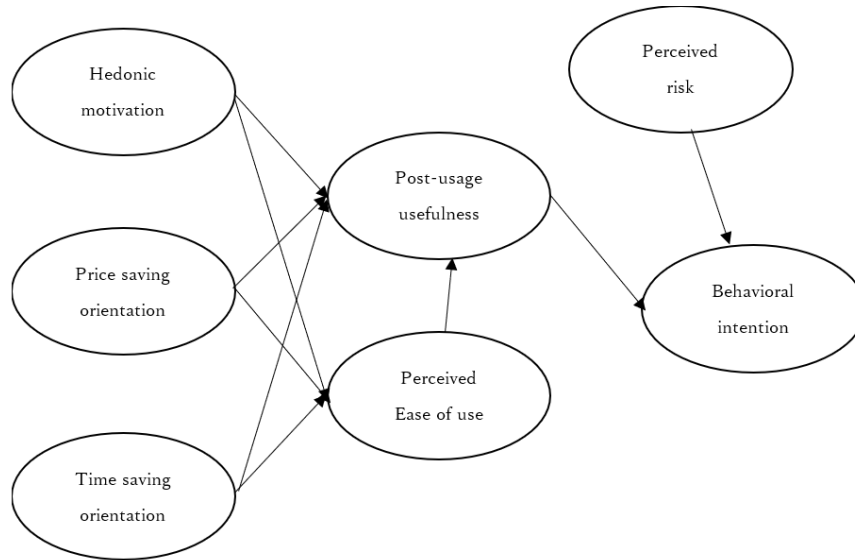
In the field of digital disruption, there are few studies on the dynamics of digital disruption from the consumer's perspective. From the company's perspective, Karimi & Walter (2015), taking the newspaper industry as an example of digital disruption caused by internet media, proposes some factors to reinforce the capability against the digital disruption with secondary data of companies' performance indicators and some interviews with board members in newspapers companies (Karimi & Walter, 2015). In banking, digital disruption would lead all relevant authorities to outcomes in the short run such as erosion of the margin and increasing market competitiveness and to ones in the long run such as market changing from oligopoly of existing bankings into the oligopoly of platformers (Vives, 2019). This study focuses on the outcomes generated by digital disruption, but the mechanism of digital disruption is not explored. In the publishing industry, the conflicts between existing publishers and Amazon, one of the disruptors, have continued and struggled each for several years (Gilbert, 2015). This study also mentions decreasing the margin in the industry and the pros and cons caused by the competition between them. Baiyere (2020) listed the previous research on digital disruption and built a concept of it and its properties, persisting the uniqueness of digital innovation (Baiyere, 2020). Thus, some researchers have focused on outcomes of digital disruption and the dynamic capability against digital disruption of industries and

companies even though digital disruption is caused by acceptance of digital disruptive innovations by consumers. In other words, the study on the fundamental factors promoting digital disruption has not been accumulated yet. Therefore, new understandings for all relevant authorities about digital disruption should concentrate on the dynamics of consumers' innovation acceptance, which thereby causes the disruption. Thus, in this paper, using TAM, we would like to figure out the facilitating factors of digital disruption with innovation acceptance by consumers in order to understand the dynamics of digital disruption from the point of view of customers.

3. RESEARCH MODEL

In this study, we compare the differences in the factors of consumer acceptance of each of the services before and after digital disruption, in the context of Demae and FDS, in order to clarify why FDS is accepted by consumers. For this purpose, we adopted a part of the Technology Acceptance Model (TAM) of Davis et al. (1989), Dinev & Hu (2007), as shown in Figure 1.

We adopted this model because TAM is especially useful in explaining the users'
(consumer in our context) perspective. Davis et al., (1989) wrote "The goal of TAM is to
provide an explanation of the determinants of computer acceptance that is general,
capable of explaining user behavior across a broad range of end-user computing
technologies and user populations" (Davis et al., 1989: 985).

In the original TAM, perceived ease of use and perceived usefulness were assumed
to mediate behavioral attitudes and lead to behavioral intention (Davis et al., 1989).
After the main finding that both perceived usefulness and perceived ease of use directly
influence behavioral intention, Venkatesh & Davis (1996) created the final version of the
TAM. Therefore, in this study, we removed behavioral attitudes from the original model

of TAM, which leads directly from perceived ease of use and usefulness to behavioral intention.

Also we removed the path from perceived ease of use to behavioral intention. Koufaris (2002) pointed out that perceived ease of use is not a significant determinant of behavioral intention, and in this study, we also developed a theoretical model that assumes no causal relationship between perceived ease of use and behavioral intention. It was pointed out that perceived ease of use has a large effect on behavioral intention in people who have little direct experience with a particular system, but that perceived ease of use has little effect on behavioral intention in people who have used a particular system for a certain period of time (Venkatesh, 2000 : Venkatesh & Davis, 1996), which also supported our theoretical model.

In previous studies, TAM has been employed in a variety of contexts, including online game (Hsu & Lu, 2004), online shopping (Cheema et al., 2013), digital libraries (Thong et al., 2004), telemedicine technology (Chau & Hu, 2001), and so on. FDS uses innovative technology systems with platforms, and e-shopping behavior (browsing, trading, etc.) is a type of consumer use system. Thus, TAM provides a useful base for the study investigating consumer acceptance of FDS and Demae respectively.

TAM proposes that two beliefs about a new technology, post-usage usefulness and perceived ease of use, determine their intention to use it. The three criterion variables used in TAM are explained below. The first one is *post-usage usefulness*. This has a

stronger meaning than the perceived usefulness used in traditional studies about TAM. From the consumer perspective, perceived usefulness refers to how consumer performance would improve by adoption of a technology. On the other hand, post-usage usefulness reflects long-lasting usefulness (Bhattacherjee et al., 2008). The researchers argue that this variable is practical and dominant in the sense that it is more stable because it occurs after a user has used it for a long period of time. The second one is *perceived ease of use*. It is referred to if customers think the service can be used easily then the service will be useful, beneficial, and reasonable for them. The third one is *behavioral intention*. This is a factor that determines the acceptance of technology. It also means the choice of whether the consumer will continue to use the service.

Now, we turn to explaining the reasons for the selection of external factors. When setting the main factors, which let consumers accept FDS as external factors of the TAM model, there is currently little research on FDS. Thus, we referred to existing research on online shopping, which is a similar concept. Among them, we narrowed down the factors of consumer acceptance that were often presented in previous studies and adopted four of them as external factors of this research model as follows.

a, Hedonic motivation

According to Bolton & Drew (1991), value was once thought of simply as a trade-off between quality and price, but in fact value is not that simple, and scholars believe that

there are numerous dimensions to value. Many researchers now consider the two most universal dimensions of value to be utilitarian and hedonic values (Babin et al., 1994). Shopping has also been considered a rational process from a utilitarian point of view (Forsythe & Bailey, 1996; Khajehzadeh et al., 2014). However, researchers are also becoming aware of the importance of the potential entertainment and emotional value of shopping (Babin et al., 1994; Wakefield & Baker, 1998). Hedonic value is defined as an overall assessment of the experiential benefits and sacrifices of entertainment escape (Babin et al., 1994). This concept of empirical hedonism is now considered an important way of thinking about consumer purchasing and consumption (Rezaei & Ghodsi, 2014). Hedonic value has been discussed in several studies on store shopping (Darden & Reynolds, 1971) and has recently been suggested as an important factor in online shopping (Burke, 1999：Hoffman & Novak, 1996). For example, recent studies have shown that a hedonistic perspective is very important for Internet-based television shopping and empirically links fun with shopping intent (Wagner et al., 2016). Based on the above discussion, hedonic motivation in online shopping is considered to be an important factor that encourages actual behavior and is therefore considered to be a major factor in consumer acceptance of FDS. Therefore, the following hypothesis is proposed.

H1. Hedonic motivation positively affects behavioral intention to use FDS more than

that of Demae.

b. Time saving orientation

In a busy lifestyle these days, many people want to save the effort of looking for food

or waiting for food in a restaurant, and they hope to get the food delivered as soon as

possible without hassle (Yeo et al., 2017). They also emphasize that consumers' changing

lifestyles and lack of time make it increasingly difficult for them to actually go to stores,

and as long as online shopping can save time, consumers will continue to use its services

(Wu, 2003). Recent studies have shown that delivery delays have a negative impact on

consumer satisfaction, and that consumers are more concerned about delivery time for

online delivery (Chan et al., 2016; Liu et al., 2008). Another study has also found that

higher-income consumers are attracted by the time-saving features of web-based

shopping environments to a greater extent than the money-savings aspects attract

lower-income consumers (Punj, 2012). As can be seen from these previous studies, time-

saving orientation in online shopping is considered to be a very important factor in

encouraging actual action, and thus a major factor in consumers' acceptance of FDS. We

propose the following hypothesis.

H2. Time saving orientation positively affects behavioral intention to use FDS

more than that of Demae.

c. Price saving orientation

Price is the monetary value that must be given in return for the purchase of a

product or service (Nagle & Reed, 2002). In the face of the current economic recession,

many consumers will be more price-sensitive and therefore they will be collecting price

information. Low prices are both attractive to business owners and consumers (Del

Vecchio & Puligadda, 2012). This fact applies not only to traditional shopping, but also

to today's online society. For example, we know that one of the factors that attracts

consumers to store online is the price savings (Reibstein, 2002). Moreover, when

comparing traditional retail and online shopping, it is proven that online shopping can

offer products at lower cost and can save more money (Akroush & Al-Debei, 2015). In

addition, previous research suggests that the Internet provides consumers with

information to compare prices, thereby consumers obtaining lower priced goods (Alba et

al, 1997; Soscia et al., 2010). As an economic incentive for online purchasers to continue

using the service more, monetary saving has been identified as a component of utility

value (Atchariyachanvanich et al., 2008). Based on the above discussion, the price saving

orientation in online shopping is considered to be a very important factor that encourages

actual action, and also considered to be a major factor in consumers' acceptance of FDS.

H3. Price saving orientation affects positively behavioral intention to use FDS more than that of Demae.

d. Perceived risk

Traditionally, the benefits of online commerce and the potential of online shopping have been discussed. Recently, it has also been presented that there are some negative aspects (Ko et al, 2004). Consumers perceive risk in many purchasing behaviors, but they perceive a higher level of risk when shopping online (Doolin et al., 2005). For example, when consumers do not trust the quality of a product or online service, they may worry about delays in product delivery, being forced to pay for a product they have not received, or other illegal activities (Ba & Pavlou, 2002). The theory of perceived risk has been debated since the 1960s to explain consumer behavior (Taylor, 1974). The perceived risk of online shopping is the expectation of loss that is subjectively determined by consumers when planning to make an online purchase (Forsythe et al., 2003). Specifically, it refers to certain types of financial, product performance, social, psychological, physical, or temporal risks when consumers trade online (Ben-Ur et al., 2000; Forsythe et al., 2003). That's why scholars have presented that perceived risk in E-commerce has a negative impact on consumers' purchasing online and intention to adopt E-commerce (Zhang et. al., 2012). As can be seen from these previous studies,

online transactions carry some uncertainty, so the perceived risk in FDS has a greater

negative impact on intent to use compared to traditional services. Therefore, we propose

the following hypothesis.

H4. Risk negatively affects behavioral intention to use FDS more than that of Demae.

4. METHODOLOGY

4-1. Survey

We conducted a consumer survey to find out what differences exist in the factors

that lead consumers to accept services in FDS and Demae. In this study, "Demae" is

defined as "services in which all ordering, cooking, and delivery are performed only by

the restaurant". In contrast, "FDS" is defined as "services in which restaurants cook but

outsource processing order and delivery to a food delivery service provider"(Consumer

Affairs Agency, Mitsubishi UFJ Research Consulting, 2020). Examples of the former

include Pizza Hut, Domino's Pizza, and Gin no Sara, while examples of the latter include

Demaekan, Uber Eats, Wolt, DoorDash, and Foodpanda.

We also define the acceptance of a Demae as "the behavior of a particular person

actually using the Internet or making a phone call to order delivery," and the acceptance

of an FDS as "the behavior of a particular person actually ordering food through a FDS

application." The services we are targeting are not specific company's FDS or Demae,

because most FDS are in the early stage of implementation, and it is difficult to conduct a large-scale study of user acceptance if you target a specific company's service such as Uber Eats. Our survey targeted university students who have used FDS and/or Demae. In order to analyze consumer acceptance of FDS, we set 10s and 20s as the target of this research because they are the largest user groups of the services.

The survey questionnaire consists of two parts. The first section recorded the subject's demographic information. Assessed demographic variables were gender, age, and frequency of using FDS. The second section recorded the subject's perception of each variable in the model. In the second section, we asked each respondent to indicate his or her degree of agreement with each item. Respondents who have not used Demae answered only the part of FDS in the questionnaire, and vice versa. Data were measured with a five-point Likert-type scale, where 1 indicated strongly disagree; 2 showed disagreement to some extent; 3 stood for neither; 4 was for agree to some extent; and 5 indicated strong agreement.

The constructs of post-use usefulness, perceived ease of use, behavior intention to use, hedonic motivation, price-saving orientation, and time-saving orientation were adopted in our model from a previous study that investigated online food delivery services using TAM (Goh, Rezaei & Yeo, 2017). The constructs of perceived risk were adopted from Wu & Wang (2005) that investigated e-commerce using TAM.

In order to make the questions more applicable to FDS and Demae, the questions

were restructured. After the initial questionnaire was constructed, a pilot survey of 36 cases was conducted to refine the questions. Personal interviews with the survey respondents were then performed to refine the questionnaire. They were judged on the ease of understanding the questionnaire items. Some scales were eliminated because they were found to represent essentially the same aspects as other scales with only slightly different wording. The questionnaire consists of 29 identical questions measuring the seven latent variables in both FDS and Demae. The instrument used in this study is presented in Appendix.

For the main data collection, in order to spread google form, we asked students to scan QR code at the university directly and also distributed hyperlinks indirectly. Participation in the survey was voluntary and anonymous. To ensure consistency in the sampling time frame, these were distributed over a 12-day period.

As a result, 607 responses were collected. Valid responses are 599, considering the age of the respondents. Among them, 321 responded to questions about FDS and 330 responded to questions about Demae. Boomsma & Van Loon (1982) stated that in structural equation modeling, the sample size of the analysis should not be less than 100 to be effective, and more than 200 is necessary. Hence, we concluded that the sample size is appropriate for this study.

4-2 Comparative Analysis

This study employed structural equation modeling (SEM) to figure out how many external variables indirectly or directly affect behavioral intentions. Amos, a structural equation modeling software, is used for analyzing the data.

SEM is one of the analytical methods called "multivariate analysis" that examines hypothetical causal relationships among multiple latent variables and reveals the strength of those causal relationships. Structural equation modeling has many advantages over path analysis and regression analysis, and it is especially useful when interesting relationships exist between potential variables (Goldberger, 1973).

We also utilize the value of the indirect effect in order to compare how much each of the four external variables indirectly affects behavior intention to use between FDS and Demae. As a method, we calculate the value of the indirect effect of each external variable on behavior intention to use. After that, for each of the four external variables, we compare the value of the indirect effect between FDS and Demae. The method of calculating the indirect effects is explained in the following figure.

Figure2: Comparative analysis in TAM

[FDS]
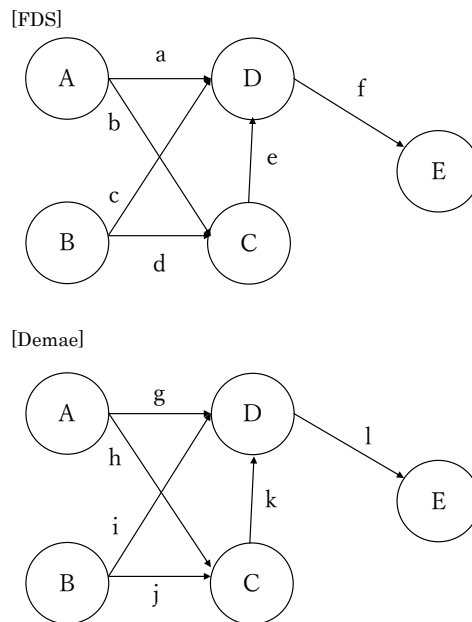
[Demae]

Source: Authors

The circles from "A" to "E" represent the latent variables and "a" to "l" are the unstandardized estimates of the path coefficients. The indirect effect of A on E in FDS is (af+bef). On the other hand, the indirect effect of A on E in Demae is (gl+hkl). Namely, the values of (af+bef) and (gl+hkl) enable us to compare the indirect effect of A on E in FDS with that of Demae. We could compare between different data by using non-standardized estimates. Since the questions and scales are the same for both FDS and Demae, we can make comparisons between different data by using non-standardized estimates.

5. FINDINGS

In this study, the questionnaire survey was conducted as we described above, and a total of 607 responses were obtained. Of these, we considered 599 as valid responses from respondents aged 18 to 29, and 8 responses from respondents aged 30 or older were excluded from the analysis. Out of all the responses obtained, 321 were valid responses regarding FDS and 330 were valid responses regarding Demae. Boomsma & Van Loon (1982) stated that in structural equation modeling, the sample size of the analysis should not be less than 100 to be effective, and more than 200 is necessary. Hence, we could conclude that the sample size is appropriate for this study. The demographic profile of the sample in this study was as follows. Males were 64.3%, females were 35.3%, and others were 0.5%. Among the age group of 18 to 29 years, 20 years of age accounted for the highest percentage (23.9%), followed by 19 years of age (23.4%), 21 years of age (18.6%), 22 years of age (9.9%), 18 years of age (9.4%) and 23 years of age (7.9%). Since the questionnaire survey was based on a five-point Likert scale, we conducted an analysis of covariance structure in the TAM diagram based on the numerical results of the five scales obtained from the questionnaire survey to verify whether the research model itself in this study was significant or not.
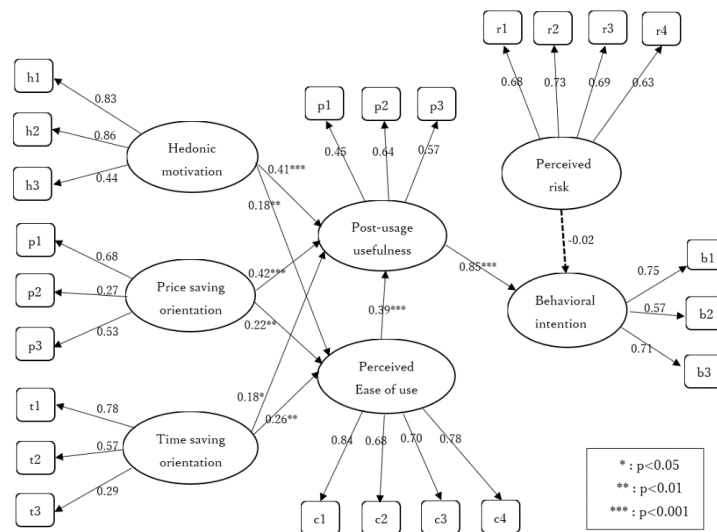
Since the four fit indices, GFI, AGFI, CFI, and RMSEA, are often used to check the fit of a model, we used these four indices to check the fit of the model in this study.

Figure3. FDS's TAM result
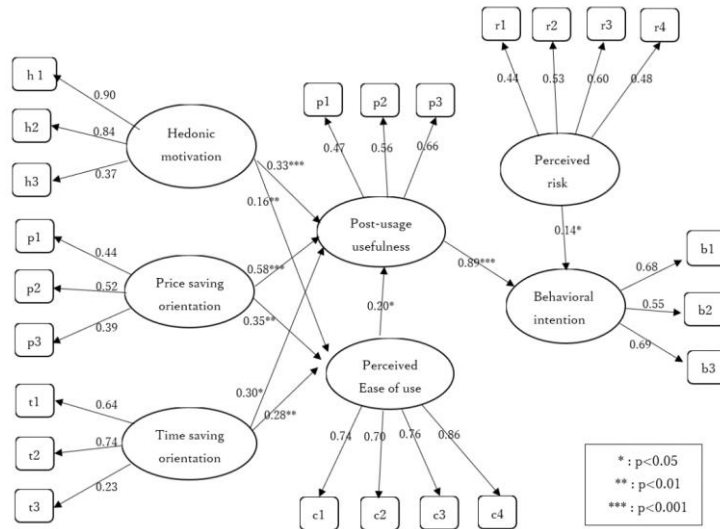
Source: Authors

Figure4. Demae's TAM result

Source: Authors

Table.1 Fit index of TAM

	GFI	AGFI	CFI	RMSEA
FDS	0.881	0.852	0.87	0.061
Demae	0.857	0.821	0.846	0.071

Source: Authors

Figures 3 and 4 show the results of the covariance structure analysis in the TAM diagrams of FDS and Demae, respectively. Table 1 shows the results of the goodness-of-fit index of GFI, AGFI, CFI and RMSEA in this research model. In general, GFI, AGFI, and CFI values of 0.9 or higher are considered to be a very good fit for the model, and the closer to 1, the better. In the case of both FDS and Demae, the value of each indicator is very close to 0.9 and also can be said to be close to 1. The closer the value of RMSEA is to 0, the higher the fit for the model is judged to be, and if the value is above 0.1, the fit for the model is judged to be poor. In this study, the value of RMSEA is below 0.1 in both the case of FDS and Demae. From the above, the goodness of fit of the model used in this study was judged to be acceptable. Next, in order to determine whether the paths in each TAM diagram were significant or not, a t-test was conducted for all paths in the TAM diagram at a 5% level of significance. As a result, all paths in the TAM diagram for FDS met the significance level and were confirmed to be significant. As for the TAM diagram of Demae, the path between perceived risk and behavioral intention did not meet the significance level, and was judged to be not significant, but all the other paths

were confirmed to be significant.

The next step is to test the hypotheses based on the results obtained. The hypotheses in this study were the following four.

H1. Hedonic motivation positively affects behavioral intention to use FDS more than that of Demae.

H2. Time saving orientation positively affects behavioral intention to use FDS more than that of Demae.

H3. Price saving orientation affects positively behavioral intention to use FDS more than that of Demae.

H4. Risk negatively affects behavioral intention to use FDS more than that of Demae.

About H1

Calculating the value of the hedonic motivation's indirect effect on behavioral intention, the result for FDS was $(0.33+0.16×0.2) ×0.89=0.32218$, and the result for Demae was $(0.41+0.18×0.39)×0.85=0.40817$. These results indicate that the impact of hedonic motivation on behavioral intention is greater for Demae compared to FDS. Therefore, H1 was not supported.

About H2

Calculating the value of the time-saving orientation's indirect effect on behavioral intentions, the result for FDS was $(0.3+0.28×0.2) ×0.89=0.31684$, and the result for

Demae was (0.18+0.26×0.39)×0.85=0.26619. These results indicate that the impact of time-saving orientation on behavioral intention is smaller for Demae compared to FDS. Therefore, H2 was supported.

About H3

Calculating the value of the price-saving orientation's indirect effect on behavioral intention, the result for FDS was (0.58+0.35×0.2) ×0.89=0.5785, and the result for Demae was (0.42+0.22×0.39) ×0.85=0.42993. These results indicate that the impact of price-saving intention on behavioral intention is smaller for Demae compared to FDS. Therefore, H3 was supported.

About H4

In the case of FDS, the path between perceived risk and behavioral intention was confirmed to be significant by t-test, but in the case of Demae, the path between perceived risk and behavioral intention was judged to be not significant by t-test. In other words, in the case of FDS, there is a causal relationship between perceived risk and behavioral intention, and perceived risk is one of the factors that explain behavioral intention. In the case of Demae, we cannot say whether there is a causal relationship between perceived risk and behavioral intention.

In the next chapter, we discuss and give suggestions for the results obtained in this chapter.

6. DISCUSSIONS

This paper investigated the facilitating factors of digital disruption from consumers' perspectives. Our survey results revealed that compared with the consumers' behavioral intention to use Demae services, perceived risk, price saving orientation and time saving orientation have explanatory power on the consumers' behavioral intention to use FDS, while hedonic motivation have less explanatory power on it. Thus, the rapid spread of digital disruption would be facilitated by reasonable price, time efficiency despite of the existence of perceived risk.

6-1. Academic Implications

Considering the previous research on digital disruption, few researches disclose the mechanism of as rapid spread of digital disruption as the recent spread of FDS have been. Our study has further illustrated facilitating factors of the change into digital disruption caused by digital innovations, an ongoing phenomenon in reality, from consumers' perspective. Our findings indicate that factors of time-saving, price-saving and perceived risk (H2, H3, H4) would expedite consumers' behavioral intentions in comparison to existing services, thereby driving digital disruption forward.

Our results suggest that hedonic motivation does not promote digital disruption as much as previous studies support and we hypothesized. Given the discussion in Chapter 2, our results do not side with the previous concept of hedonic motivation, which is that hedonic motivation might not enable consumers to accept digital innovations. Therefore,

hedonic motivation does not promote digital disruption.

The concept of risk should be redefined as from a trade-off to a compatible one. Traditionally, previous research has illustrated that risk hinders customers' purchase behaviors. Speaking of digital disruption, digital innovation might bring unexpected danger to our lives (Ganguly et al., 2017; Ettredge, 2002). Especially about digital shopping, risk is considered a trade-off between sacrifice and benefits in e-commerce shopping (Chiu et al., 2014). Furthermore, people perceiving risk through e-commerce shopping do not tend to accept e-commerce shopping services. However, we interpret our findings that consumers are increasingly taking the accompanying risks for granted in virtual business space or have accumulated learnings through repeated use of those Internet-based services. Thus, we suggest that the concept of risk needs to be reexamined in the context of digital disruption, paying more attention to how consumers' perception on the risk in virtual space has changed and developed.

6-2. Practical Implications

We have two managerial implications for practitioners. First, for marketers who are in charge of the FDS sector, FDS's risk should not be disguised and the safety of FDS do not necessarily appeal to consumers. Our results show that perceived risk might not deter customers from buying, rather, consumers seem to accept it as a part of trying a new service. In addition to that, consumers would need time for reasonable shopping. Thus, we think that marketers can turn the potential risk that consumers might perceive

into something like thrill or adventure that consumers can positively take as curiosity toward a new service. At the same time, joy of convenience that digital disruption can bring into consumers life should equally be stressed, such as time and cost saving merit as our findings show.

Second, for innovators who manage to build new innovative services threatening conventional companies, our findings show that consumers seek more visible benefits such as time and price-saving efficiency when they decide to switch their consumption behavior. Thus, successful digital disruption players such as Netflix, Amazon and UberEats have made a strong appeal about the difference between conventional service and their new service. This can be an important aspect of digital innovation that companies need to consider.

6-3. Limitations and Future study

Although we found various insights on the process of digital disruption, there are some limitations that need to be addressed in future studies. Firstly, this research was conducted with a limited number of respondents at 599. A larger number of respondents would better represent consumers in FDS. In addition to the sample size, our results could be based on Japanese ethnicity so that the diversity of participants' backgrounds is limited. This would make our implication regional and less universal. In terms of demographic characteristics, the range of age at 18-29 was quite narrow to represent the consumers of FDS. Second, as we focus only on the context of FDS to explore digital

disruption, future studies need to extend this to more various contexts where digital

disruption have happened. Although our study provides some insights based on the

study of FDS, additional tests are needed to further confirm whether our findings can be

applied in other cases of digital disruption.

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https://www.caa.go.jp/policies/policy/consumer_policy/caution/internet/assets/caution_internet_201225_0001.pdf

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8. APPENDIX

Table 2. Questionnaires about FDS for the survey

		Questionnaires
Endogenous variable	Perceived ease of use	・フードデリバリーサービスはお金のやりとりにおいてリスクを秘めていると思う ・フードデリバリーサービスは配達される商品の質という観点でリスクを秘めていると思う ・フードデリバリーサービスは配達の過程でリスクを秘めていると思う ・フードデリバリーサービスを使うことでプライバシーを危険にさらしていると思う
	Post-usage usefulness	・フードデリバリーサービスを利用することで、食事を調達する効率や情報を収集する効率が上がると思う ・フードデリバリーサービスの利用は有益だと思う ・フードデリバリーサービスは好都合な手段だ
	Behavioral intention	・私は今後もフードデリバリーサービスを使う予定である ・もしフードデリバリーサービスに新たな機能が追加されたら、ぜひとも試したい ・必要に応じてフードデリバリーサービスを利用してみようと思う
Exogenous variables	Perceived risk	・フードデリバリーサービスはお金のやりとりにおいてリスクを秘めていると思う ・フードデリバリーサービスは配達される商品の質という観点でリスクを秘めていると思う ・フードデリバリーサービスは配達の過程でリスクを秘めていると思う ・フードデリバリーサービスを使うことでプライバシーを危険にさらしていると思う
	Hedonic motivation	・フードデリバリーサービスを使っているとき私はわくわくする ・フードデリバリーサービスを使っている時とても楽しく感じる ・フードデリバリーサービスはとても面白いサービスだと思う
	Price-saving orientation	・フードデリバリーサービスの選択の仕方によっては代金を安く済ませることができる ・安い食事を探すために異なるフードデリバリーサービスのアプリを照らし合わせることがある。 ・フードデリバリーサービスは価格以上の価値を提供していると思う
	Time-saving orientation	・フードデリバリーサービスを利用すれば、普段よりも早く食事を済ませることができる ・フードデリバリーサービスを利用すると、日ごろの食事に比べて食事の調達において時間を節約できると思う ・フードデリバリーサービスを利用する際に重視しているポイントの一つは、注文してから届くまでの速さだ

Source: Authors

Table 3, Questionnaires about Demae for the survey

		Questionnaires
Endogenous variable	Perceived ease of use	・出前サービスはお金のやり取りにおいてリスクを秘めていると思う ・出前サービスは配達される商品の質という観点でリスクを秘めていると思う ・出前サービスは配達の過程でリスクを秘めていると思う ・出前サービスを使うことでプライバシーを危険にさらしていると思う
	Post-usage usefulness	・出前サービスを利用することで、食事を調達する効率や情報を収集する効率が上がると思う ・出前サービスの利用は有益だと思う ・出前サービスは好都合な手段だ
	Behavioral intention	・私は今後も出前サービスを使う予定である ・もし出前サービスに新たな機能が追加されたら、ぜひとも試したい ・必要に応じて出前サービスを利用してみようと思う
Exogenous variables	Perceived risk	・出前サービスはお金のやりとりにおいてリスクを秘めていると思う ・出前サービスは配達される商品の質という観点でリスクを秘めていると思う ・出前サービスは配達の過程でリスクを秘めていると思う ・出前サービスを使うことでプライバシーを危険にさらしていると思う
	Hedonic motivation	・出前サービスを使っているとき私はわくわくする ・出前サービスを使っている時とても楽しく感じる ・出前サービスはとても面白いサービスだと思う
	Price-saving orientation	・出前サービスの選択の仕方によっては代金を安く済ませることができる ・安い食事を探すために異なる出前サービスのアプリを照らし合わせることがある。 ・出前サービスは価格以上の価値を提供していると思う
	Time-saving orientation	・出前サービスを利用すれば、普段よりも早く食事を済ませることができる ・出前サービスを利用すると、日ごろの食事に比べて食事の調達において時間を節約できると思う ・出前サービスを利用する際に重視しているポイントの一つは、注文してから届くまでの速さだ

Source: Authors