Are digital content subscription services still thriving? Analyzing the conflict between innovation adoption and resistance

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ABSTRACT

Currently, the global market for subscription services is facing a crisis of approaching saturation, prompting increased attention to the Asia-Pacific region. Meanwhile, digital content subscription services in Japan are late in the game but are on a continuous upward trend, indicating significant development potential. Despite a global shift towards digital consumption, Japan's strong preference for physical items such as CDs and books, presents an interesting contrast that warrants further research. This study integrates the innovation diffusion and resistance theories to investigate consumers' actual usage and continuous purchase intention of digital content subscription services from both positive and negative perspectives. A questionnaire survey of 250 Japanese digital content subscribers yielded the following conclusions: First, compatibility positively influenced actual usage. Second, trialability negatively impacted actual usage. The unique characteristics of digital content subscription services were identified and compared with those of other innovative services. Furthermore, the tradition barrier exhibited a negative effect on actual usage. Last, actual usage was found to significantly and positively impact continuous purchase intention. By understanding the nuances of the Japanese market, companies can develop effective global strategies to cater to diverse consumer segments and remain competitive in an ever-changing digital landscape.

Introduction

The subscription business model, originating in the 17th century, was initially designed to encourage customers to pre-order books and periodicals in advance at a discount (Clapp, 1931). Since then, subscription-based retailing has been studied to generate repeat consumption and cultivate loyal customers, thereby increasing clients' lifetime value, particularly from a marketing perspective (Reinartz & Kumar, 2000). However, as technology advances and consumer behavior shifts, the concept of subscriptions has transformed. Typically, a subscription is understood as a fixed amount paid for unlimited or limited usage of a product or service throughout the contract term, such as a monthly or annual fee (Mitsubishi UFJ Research & Consulting, 2019). At a certain time, getting users to pay for Internet content was nearly unthinkable. Nonetheless, widespread attention has recently been paid to diverse subscription-based digital content, including not only music and videos, but also news and academic resources. The growth of "Software as a Service" (SaaS) has been facilitated by the availability of high-quality digital content (Benlian, Koufaris & Hess, 2011). Consequently, customers can only access online

content or services behind the paywall set up by subscription service providers through recurring payments (Aral & Dhillon, 2021). Moreover, the COVID-19 pandemic accelerated changes in consumer habits, particularly in the shift away from physical experiences like cinema visits toward streaming services including Netflix, Amazon Prime, and Hulu (Sheth, 2020). The success of streaming media demonstrates that digital prosperity is possible if sufficient attention is paid to user demand, specifically because COVID-19 has partially altered consumer lifestyles (World Economic Forum, 2020). Nevertheless, in the long run, sustaining subscriber growth remains a critical challenge. The American streaming giant Netflix, for instance, encountered an unprecedented decline in its subscriber base in 2022, foreshadowing a crisis in which the saturation of subscriber numbers would become a bottleneck to the growth of digital content distributors (Bloomberg, 2022). To offset this, distributors have been tapping into Asian markets because of an increase in subscribers within the Asia-Pacific region, including Japan. Although official figures are yet to be released, it was estimated that by the end of 2023, the number of Netflix subscribers in Japan had reached 8.1 million (ampd, 2024).

The Japanese digital subscription market holds promise for several reasons. First, Japan has consistently been at the forefront of digital content production (Holroyd, 2019). High-quality digital content, such as anime, music, movies, and TV dramas, has established a

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strong foundation for users' willingness to pay for digital subscription services. Second, Japan attaches great importance to intellectual property protection, which has effectively curbed the spread of pirated digital content (Davis, 2004), ensuring the healthy development of the digital content industry. However, influenced by traditional cultural habits, Japanese users have a strong preference for tangible products, leading them to favor the purchase of physical books, CDs, and other items (International Federation for Phonographic Industry, 2022). This implies that, considering cultural differences, converting Japanese consumers into digital content subscribers might be fraught with unique obstacles compared to other regions because of the innate preference for physical objects. In short, the development of Japan's digital content subscription market presents both opportunities and challenges, yielding it a special position, both in Asia and globally. Market data also support this view. Regarding end-user payment amounts, the domestic market for subscription services in Japan (a total of six markets) was 961.55 billion yen (approximately $6.11 billion) in fiscal year 2021, 10.6 % higher from the previous year (Yano Research Institute, 2022). Conversely, despite the growing popularity of subscription-based products for digital content such as videos, music, and e-books, consumer awareness of this subscription economy model is not yet adequate. According to survey results from Power (2023), digital content services are mainly known and used by young people aged 20–34. Except for videos and music, the number of users of all other types of digital content is relatively low, and overall awareness is still quite limited. Additionally, some consumers exhibit "subscription fatigue" or "subscription poverty", a trend exacerbated by over-subscription during the pandemic, leading many to reassess their subscription choices (Nikkei Shimbun, 2022). Consequently, some subscribers have become increasingly selective in terms of subscriptions.

As a new technology born out of the digital revolution, subscription services for digital content are not yet household names, although some consumers have become tired of them. Does this suggest that this service can quickly attract consumers initially, but that consumers can also rapidly lose interest in it? Although Japan's digital content subscription market has gradually matured since its nascent stage, there is currently a scarcity of research focusing on Japanese digital content subscribers. This industry has attracted widespread global attention; however, its business development has fallen short of expectations, warranting further investigation into the underlying reasons. Whether user saturation is an inevitable hurdle for digital subscription services is worth discussing. Hence, this study investigates Japanese digital content subscribers' intention and actual usage behavior to continue paying in the post-pandemic era and the factors influencing their decisions from the dual perspectives of innovation diffusion and resistance.

The remaining of the paper is structured as follows: Section 2 provides a literature review on digital content subscription services, innovation adoption, and innovation resistance, followed by the development of research hypotheses and a conceptual model. Section 3 details the methodology, including data collection procedures and respondent demographics. Section 4 presents the survey results and highlights key findings derived from both measurement and structural models. Section 5 discusses the theoretical and practical implications of the study. Section 6 concludes with a summary, limitations and directions for future research.

Literature review and hypothesis development

Digital contents subscription services

Under the premise that consumers have the right to unrestricted access to Internet resources, the development of pricing strategies for digital content has been a topic of ongoing discussion among content distribution providers (Rowley, 2008). Owing to its low profitability

and revenue sharing level, the advertising-based business model, which relies on advertisers as its primary source of revenue, is gradually transitioning to a subscription-based model based on consumer payments (Punj, 2015). Multiple revenue models exist for digital content subscription services. The most fundamental is the subscription model, in which users pay a recurring fee (e.g., monthly or yearly) to access content or services with no or fewer advertisements (Li, Luo, Qiu & Bandyopadhyay, 2020). For example, a hybrid model combines an ad-supported model with a subscription model, making the subscription price cheaper than the regular price. This low-price strategy is effective for attracting new users. The "freemium" model, exemplified by companies like Spotify, one of the most successful music and podcast streaming companies, allows users to access a basic level of content for free while encouraging upgrades to paid tiers for enhanced experiences (Wagner, Benlian & Hess, 2014). However, most digital content providers now offer new subscribers a one-month trial period, after which they can access the content only if they pay. Conversely, multitiered subscriptions offer different levels of service with varying prices and content to meet the needs and budgets of different users. Streaming companies, such as Netflix and Disney+, have eliminated the trial period for subscribers. Instead, they have tiered pricing for paying subscribers, meaning that the more expensive the plan, the higher the quality that service subscribers can enjoy (Bray, Kanakaratne, Dragouni & Douglas, 2021). Building on this, there is a model called the bundled service model. Multiple services are packaged into a single subscription, including music, videos, and magazines (Kübler, Seifert & Kandziora, 2021). This requires collaboration between multiple digital content platforms to provide services. The above business models highlight that providers of digital content subscription services are striving to offer different solutions to meet the evolving demands of users and to stay competitive in a fiercely contested market (Colbjørnsen, Hui & Solstad, 2022). Yet, the effectiveness of these innovative marketing strategies in gaining consumer favor remains underexplored.

Consumer studies on digital content subscription services are increasing. The primary focus has been on services with large and well-developed user bases, such as video (Lee, Nagpal, Ruane & Lim, 2018), music (Lim, Ro, Lee & Jahng, 2022), and news (Pattabhiramaiah, Overby & Xu, 2022). As mentioned earlier, various business models exist for subscription services in the marketplace, and the focus is generally on analyzing consumer intentions and behaviors. Many dimensions influence consumer subscription to digital content services. Some studies explored specific service characteristics based on existing research frameworks. For example, TM, Singh, Khan, Ul Akram and Chauhan (2021) reported that all constructs of the Unified Theory of Acceptance and Use of Technology model were motivators in Indian consumers' adoption of subscription-based video-on-demand streaming services. Other studies have combined appropriate independent variables based on the characteristics of streaming services and their usage. For example, Wang, Zhang, Ye and Nguyen (2005) suggested that consumers subscribing to paid online services were motivated by convenience, essentiality, and usage frequency. From a platform-oriented perspective, recent research has delved into why consumers might prefer digital streaming platforms over traditional media. Evens, Henderickx and Conradie (2024) explored this trend among Belgian consumers, developing a metric to evaluate video streaming platforms based on technological affordances. Nonetheless, most studies tend to focus on variables that are positively related to the use of digital content subscription services, often overlooking the potential barriers. Considering that this study focuses on Japanese market, where cultural norms and long-standing preferences for physical media are deeply ingrained, barriers to digital content subscription adoption may be particularly pronounced. Thus, to make the discussion more comprehensive, this study investigates both the positive and negative perspectives. Moreover, the focus will be on subscription

services for digital content; non-digital subscriptions or sell-on-demand services are beyond the scope of this study.

Innovation adoption

Innovation adoption is a multidimensional field of study that spans three key levels: government, business, and consumers. Each level has a distinct role in the adoption and diffusion of new technologies and practices. Governments shape innovation adoption through policies, regulations, and financial incentives. Funding research (Abbas, Avdic, Xiaobao, Hasan & Ming, 2019), offering tax incentives (Han, Mao, Yu & Yang, 2024), and implementing new technologies in the public sector (Ahn & Chen, 2022), they are crucial facilitators of innovation adoption. For businesses, innovation adoption is driven by the necessity to remain competitive and meet market demand (Wang, Chen, Wang, Fang & Qiu, 2024). Companies evaluate the potential benefits and risks of new technologies, with adoption influenced by organizational readiness and leadership support (Yu, Xu, Zhou & Chen, 2024; Zhou, Zhang & Ruan, 2023). Meanwhile, consumers serve as the ultimate decision-makers, influenced by perceived benefits, ease of use, and social factors (Kwangsawad & Jattamart, 2022; Mani & Chouk, 2018). Therefore, understanding these motivations is essential for businesses and governments to successfully introduce innovations. (Khan et al., 2022).

Innovation diffusion theory (IDT), proposed by Rogers (2003), is a reliable framework for innovation research (e.g., Agag & El-Masry, 2016; Sahin, 2006). This theory posits that consumers do not spontaneously adopt new products or technologies; instead, they make conscious decisions to embrace innovation. This also suggests that their decision to adopt an innovation is well considered (Tornatzky & Klein, 1982). Rogers (2003) also proposed five characteristics of innovation that may affect adoption: 1) relative advantage, referring to the perceived superiority of the innovation over its predecessor; 2) compatibility, indicating how well the innovation fits into existing life; 3) complexity, reflecting the ease of learning and familiarity with the innovation; 4) trialability, representing the opportunity for potential adopters to explore innovation before adoption; and 5) observability, denoting the visible benefits to potential adopters. Yuen, Wong, Ma and Wang (2020) proposed a hypothetical model suggesting that the perceived value of autonomous vehicles moderates the relationship between innovation diffusion attributes (i.e., relative advantage, compatibility, complexity, trialability, and observability) and public acceptance.

Combining IDT with the Technology Acceptance Model (TAM), which emphasizes explaining and predicting context-specific adoption and usage behavior for information systems and new media technologies (Davis, 1989), provides a robust methodological approach. This integrated model's validity has been extensively tested across various innovation domains. The model highlights that perceived usefulness and ease of use are critical predictors of consumer adoption and usage, thus shaping attitudes and intentions. Most literature focuses on how innovation characteristics influence perceived usefulness and ease of use (Al-Rahmi et al., 2019; Min, So & Jeong, 2021) or how they affect attitudes (Talukder, 2012) and behavioral intentions toward innovative technologies (Rattanaburi & Vongurai, 2021). According to the TAM (Davis, 1989), actual usage is defined as the frequency and duration of technology use, typically driven by intention. Although the actual usage behavior is crucial for understanding technology diffusion, it remains under-researched. Klopping and McKinney (2004) modified the TAM by deleting the perceived ease of use—perceived usefulness link and adding a direct relationship between perceived usefulness and actual usage, indicating that, in the context of e-commerce, actual usage may be influenced by factors beyond perceived usefulness. This study targets users of digital content subscription services to investigate whether innovation characteristics directly influence their usage behavior.

Considering the unique nature of digital content subscription services, this study focuses on two innovation characteristics that reflect their features: compatibility and trialability.

Previous studies have shown that compatibility positively affects the adoption of various technologies. For instance, Al-Jabri and Sohail (2012) observed that compatibility positively affects mobile-banking adoption. Oliveira, Thomas and Espadanal (2014) assessed the determinants of cloud-computing adoption in the manufacturing and service industries and confirmed the positive impact of compatibility on adoption behavior. In the case of digital content subscription services, compatibility encompasses the alignment with users' existing devices, platforms, payment methods, and content consumption habits. Ensuring high compatibility can reduce adoption barriers and enhance service penetration and subscriber satisfaction (Guo, 2022). For example, video-based subscription services that support multiple operating systems (iOS, Android, Windows, and macOS) enable seamless use across devices (Wayne, 2018). Therefore, we propose the following hypothesis:

H1. Compatibility has a positive impact on actual usage.

Trialability, as original definition in IDT, facilitates the adoption of new technologies and services by allowing users to experience them firsthand (Rogers, 2003). Atkinson (2007) designed valid questionnaires to evaluate the perceived attributes of technology-based health education innovations such as trialability, aiding eHealth developers in enhancing adoption potential during the development process. Moreover, it has been demonstrated that within the healthcare domain, trialability has been shown to positively influence healthcare professionals' attitudes toward smartphones (Park & Chen, 2007). Digital content subscription platforms were originally designed to offer free trial periods, partially free content, limited time, and customer support during the trial period to boost user adoption and satisfaction (Liao, Huang, To & Lu, 2017). Nevertheless, considering the special properties of subscription services, Deng, Lambrecht and Liu (2023) argued that improper pricing strategies during trial periods could harm company profits, and that there is a deviation from the original concept of trialability. Major players in the digital subscription industry, such as Disney+ and Netflix, have discontinued free trials due to high operating costs and the low conversion rate of trial users into paying subscribers. Additionally, users' intentions to pay for digital content are diminished by an abundance of free online resources (Chyi & Ng, 2020) and pirated digital services (Cesareo & Pastore, 2014). Consequently, this study posits that the higher the trialability, the lower the likelihood of using paid services, leading to the following hypothesis:

H2. Trialability has a negative impact on actual usage.

Innovation resistance

Ram and Sheth (1989) proposed a theoretical model for innovation resistance theory (IRT), which identifies five key determinants of resistance to innovation, classified into functional and psychological barriers based on the characteristics outlined in IDT. Types of functional barriers include usage, value, and risk. Usage barriers arise when an innovation is incompatible with existing workflows, practices, or habits. Value barriers concern whether an innovation provides an alternative value to its predecessor. Risk barriers involve concerns regarding the inherent risks of innovation. Psychological barriers include both tradition and image barriers. Tradition barriers refer to the extent to which adopting innovation necessitates a shift in prevailing life perceptions. Moreover, image barriers are related to adopters' overall impressions of innovation. The diffusion of innovation begins once these resistance barriers are overcome (Laukkanen, 2016).

A notable observation is that innovation adoption and resistance are not mutually exclusive but rather represent a balance of opposing

forces. Despite IRT evolving from IDT, they differ fundamentally in nature and impact consumer behavior in distinct ways (Claudy, Garcia & O'Driscoll, 2015). Recent research highlights that focusing solely on factors leading to consumer adoption creates a bias in favor of change, which may overlook the reasons for resistance (Talwar, Talwar, Kaur & Dhir, 2020). Therefore, analyzing resistance factors often provides clearer insights into why certain technologies fail to gain traction. Many emerging online service-oriented technologies such as mobile banking (Laukkanen, 2016) and online shopping (Lian & Yen, 2013) have met consumer resistance. Consumer adoption of new technology is not influenced solely by a single factor, and the factors that lead to changes in consumer intentions or behaviors are complex (Talke & Heidenreich, 2014). For instance, consumers may recognize the benefits of a new technology and hold favorable attitudes toward it but still resist adoption due to perceived drawbacks. Although prior research on innovation resistance has primarily addressed tangible products, Schaarschmidt, Heidenreich, Bertram and Dose (2024) adopted a post-adoption perspective on digital subscription services, concluding that situational passive innovation resistance can positively impact continuous service usage. This finding underscores the importance of this study and indicates that studying consumer psychology after the adoption of a new technology may yield unexpected insights. Few studies have integrated both the factors into a single model. This exploratory study combines the IDT and IRT by selecting the characteristics that best fit digital content subscription services. Based on the characteristics of digital content subscription services, this study argues that tradition and risk barriers are particularly relevant. Tradition barriers involve consumers' reliance on existing habits and preferences, and their discomfort with new technologies and services (Ram & Sheth, 1989). Moorthy et al. (2017) identified tradition barriers as the most significant factor influencing the intention to adopt mobile commerce. Similarly, Leong, Hew, Ooi and Wei (2020) reported that tradition barriers significantly negatively impact the innovation resistance of mobile wallets. Considering the Japanese preference for tangible items, it is anticipated that traditional habits and preferences could play a significant role in shaping the attitudes or behaviors of subscribers, influencing their decisions. Hence, we propose the following hypothesis:

H3. Tradition barrier has a negative impact on actual usage.

Risk barriers pertain to consumers' concerns regarding security, privacy protection, and the reliability of new technologies and services (Ram & Sheth, 1989). Claudy, Peterson and O'Driscoll (2013) argued that understanding consumer adoption of renewable energy systems necessitates considering both reasons for and against adoption as well as attitudes toward new technology, with risk barriers serving as deterrents to adoption. As an emerging technology, the influence of risk barriers on users' intentions to adopt mobile payments has been the subject of empirical research in various regions (Chung & Liang, 2020). For instance, Sivathanu (2019) verified that risk barriers positively impact consumer resistance to technology in India's digital payment system, and that this resistance negatively affects usage behavior. As noted above, users are concerned about ongoing subscription fees, especially if the service does not meet their expectations or is infrequently used. Hidden fees and automatic renewals can result in unexpected financial outlays. Additionally, there is a risk that personal and payment information may be compromised or misused. Such financial and privacy risks may discourage usage (George, 2024). Based on these findings, the following hypothesis is formulated:

H4. Risk barrier has a negative impact on actual usage.

Numerous studies have indicated that user satisfaction is a key factor in the continued use of services, often reflecting positive behaviors after a gratifying purchase experience (Al-Emran, Arpaci & Salloum, 2020; Kim & Kim, 2020; LaBarbera & Mazursky, 1983). Based on the stimulus-organization-response paradigm, Al-Debei,

Dwivedi and Hujran (2022) demonstrated that for Jordanian telecommunication customers, customer satisfaction has a positive impact on the continuance purchase intention of mobile value-added services. Similarly, Lim et al. (2022) found that user satisfaction and switching costs of music streaming are positively correlated with the intention to continue using digital content subscription services. When users pay for a service, they usually perceive a greater value in the service or product. Driven by the sunk-cost effect, they are more likely to continue using them or renew contracts. (Iyengar, Park & Yu, 2022). Consequently, the continuous use of these services has become a key research focus (Carissa, Erlangga, Evik & Handayani, 2023; Pan, Qin, & Quan, 2022). Furthermore, Chakraborty et al. (2023) revealed that in addition to social values, the other four values within the theory of consumption values (functional, emotional, epistemic, and conditional), along with trust, positively affect repurchase intentions on over-the-top platforms. As users decide to continue using a digital subscription service based on their experience, our study assumes that feedback from actual usage behavior will impact their decision to renew subscriptions. Since these services depend on repeated purchases, the term "continuous purchase intention" is used to describe the likelihood of ongoing usage. Therefore, we propose the following hypothesis:

H5. Actual usage has a positive impact on continuous purchase intention.

In summary, the conceptual model of this study is illustrated in Fig. 1.

Methodology and data collection

In February 2023, an online survey was conducted among Japanese consumers who had previously used subscription services for digital content. The survey was facilitated by Freeasy Research Company, a renowned firm in Japan with well-established survey distribution channels. While Freeasy assisted with the data collection, the authors were responsible for designing the survey, monitoring the data collection process, and analyzing the collected data.

Sampling and data collection

To mitigate sampling errors, a random sampling technique was employed to ensure that the sample accurately represented the population of Japanese consumers using digital content subscription services (Cochran, 1977). Questionnaires were randomly distributed online through Freeasy's channels and responses were received from individuals across 40 prefectures in Japan. The occupations of the respondents were diverse, spanning 12 categories, including students, part-time workers, company employees, public servants, business owners, medical professionals, homemakers, and freelancers. The industries represented in the sample vary equally, encompassing 17 sectors, including service, transportation, education, healthcare, finance, and real estate. This approach comprehensively reflects the demographic and occupational diversity of digital content subscribers in Japan.

First, 1000 respondents were screened and 319 were paid digital content subscribers. In descending order of genre, the number of digital content users was videos ($n = 255$, 79.94 %), music ($n = 151$, 47.34 %), e-books ($n = 87$, 27.25 %), games ($n = 54$, 16.93 %), and software (38, 11.91 %). In terms of spending, 146 respondents (45.77 %) paid between 1000 yen (approximately $6.36) or less per month for subscription services. Meanwhile, only 48 respondents (15.04 %) spent 4000 yen (approximately $25.43) or more. Accordingly, it can be assumed that a preference among Japanese consumers for more affordable streaming media services like video and music, compared to more costly subscription services like games and software. An official survey of 319 digital content subscribers yielded 300 responses.
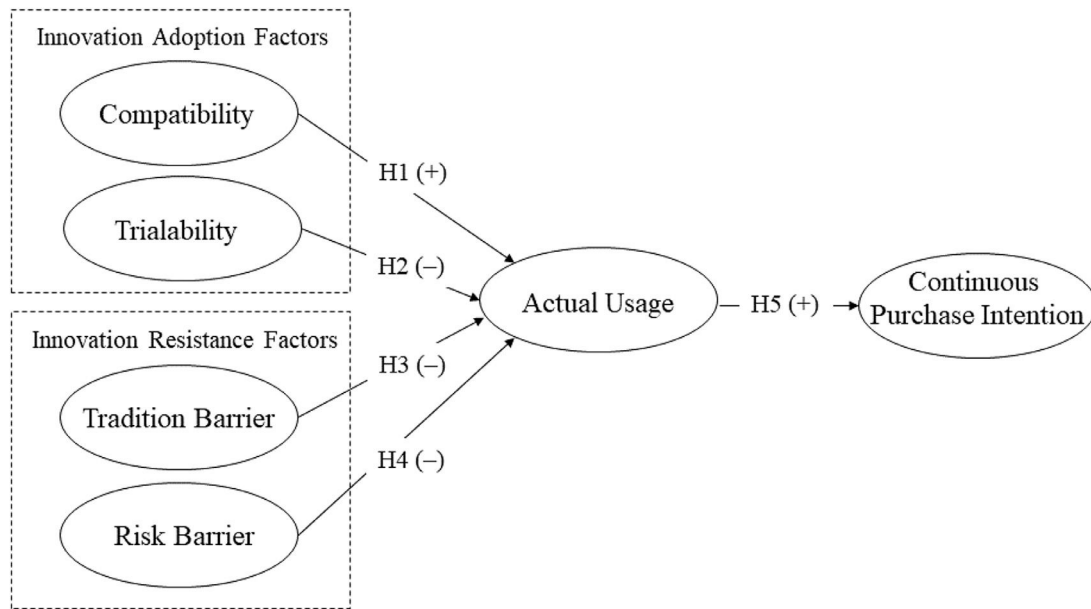
Fig. 1. Research conceptual model.

To avoid the influence of dishonest responses, 250 valid responses were collected after eliminating responses with a standard deviation of less than 0.5. This is because when the standard deviation is below 0.5, the values of the data points tend to cluster around the mean, indicating insufficient variability and discriminative power of the data (DeVellis & Thorpe, 2021). The sex ratio was reasonably balanced with 124 men and 126 women. Most respondents between the ages of 15 and 99 were in their 20 s ($n = 74$) and 30 s ($n = 59$) in these age groups. Detailed demographic characteristics are shown in Table 1.

Variable measurements

All measurements were adapted from previously reviewed literature, with specific items and constructs detailed in the Appendix at the end of the paper, and referenced authors included. English questionnaires were first translated into Japanese, and then native Japanese speakers majoring in Japanese proofread the questionnaire items to ensure accuracy and reduce ambiguity. The independent variables (compatibility, trialability, traditional barrier, and risk barrier), mediator variable (actual usage), and dependent variable

(continuous purchase intention) were assessed using a five-point Likert scale (from 1 = strongly disagree to 5 = strongly agree). SmartPLS4 was chosen for data analysis due to its predictive capability and suitability for studies with small sample sizes. Its robustness, minimal identification concerns, and applicability to both smaller and larger samples (Hair, Ringle & Sarstedt, 2011) made it an appropriate choice.

Non-response bias

A formal survey was conducted with 319 subscribers, achieving a 94 % response rate, and 300 responses were collected between February 8 and 14, 2023. This high response rate suggests that the sample is representative of the overall population (Groves, 2006). Subsequently, a t-test was conducted using SPSS for archival analysis (Rogelberg & Stanton, 2007). Comparisons between the 300 respondents and 19 non-respondents based on demographic factors, such as age (p-value = 0.155 > 0.05), sex (p-value = 0.764 > 0.05), and household income (p-value = 0.389 > 0.05). The analysis revealed no statistically significant differences (Armstrong & Overton, 1977), indicating that non-response bias was not a significant issue in this study.

Common method bias

Considering that this study employed a survey-based data collection method, there is a potential risk of common method bias (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). Kock (2015) suggests that if all variance inflation factors (VIFs) from a full collinearity test are below 3.30, the model can be considered free from pathological collinearity, meaning that it is not affected by common method bias. In the full collinearity approach, attention should be focused on the method bias implied by collinearity among factors rather than on elements within the measurement model. Therefore, assessing common method bias requires evaluating the VIF values within the inner model. Furthermore, all inner VIFs in this study were below the recommended threshold of 3.30, ranging from 1.000 to 1.604. These results indicate that the model is free from pathological collinearity and unaffected by common method bias.

Table 1
Demographic characteristics ($n = 250$).

Category	Item	Frequency ($n = 250$)	Percentage (%)
Sex	Male	124	49.6
	Female	126	50.4
Age	15−19	27	10.8
	20−29	74	29.6
	30−39	59	23.6
	40−49	43	17.2
	50−59	34	13.6
	Over 60	13	5.2
Marital Status	Married	87	34.8
	Unmarried	163	65.2
Household Income	Less than 1 million	20	8.0
	1 million to less than 5 million	99	39.6
	5 million to less than 10 million	103	41.2
	10 million to less than 15 million	17	6.8
	Over 15 million	11	4.4

Analysis and results

In this study, the variables were measured reflectively with survey items expected to be manifestations of the underlying latent constructs. For instance, actual usage was assessed using multiple indicators that reflect the overall usage of digital content subscription services, which are expected to be highly correlated as they originate from the same underlying construct of actual usage (Bollen & Lennox, 1991; Jarvis, MacKenzie & Podsakoff, 2003).

Measurement model

Initially, tradition barrier 3 (0.618) and continuous purchase intention 2 (0.622) were removed from the partial least squares (PLS) analysis results because they had factor loadings below 0.70. Subsequently, the correlation between actual usage and continuous purchase intention reached 0.874, which exceeded the square root of average variance extracted (AVE) of actual usage. This problem was resolved by removing continuous purchase intention 1, which had a relatively low factor loading (0.771). Additionally, the standardized root mean squared residual (SRMR) value decreased to below 0.08 (Kline, 2023) after the deletion of trialability 1 (0.720), even though its factor loadings exceeded 0.70. Finally, Cronbach's α coefficient for continuous purchase intention (0.646) did not exceed 0.70; however, it was retained because an alpha value of slightly less than 0.70 is acceptable for new scales or exploratory studies. (DeVellis & Thorpe, 2021). Thus, internal consistency was not compromised. All composite reliability and AVE values were greater than the recommended levels of 0.70 and 0.50, indicating convergent validity (Fornell & Larcker, 1981). The results are summarized in Table 2.

In Table 3, all correlation coefficients are less than the square root of the corresponding AVE, and the discriminant validity is deemed satisfactory. Finally, the SRMR value was 0.068, which is less than the required criterion of 0.080, indicating a satisfactory model fit (Kline, 2023).

Structural model

The structural model was evaluated using Bootstrapping (5000 subsamples). According to the structural model test results in Table 4, a high R^2 (explained variance) value is obtained, suggesting a good

Table 2
Results of convergent validity testing.

Constructs	Items	Loading	Cronbach's α	CR	AVE
Compatibility (COM)	COM1	0.909	0.899	0.937	0.832
	COM2	0.921			
	COM3	0.906			
Trialability (TRI)	TRI1	–	0.835	0.896	0.743
	TRI2	0.900			
	TRI3	0.919			
	TRI4	0.758			
Tradition Barrier (TB)	TB1	0.966	0.719	0.856	0.752
	TB2	0.755			
	TB3	–			
Risk Barrier (RB)	RB1	0.820	0.771	0.863	0.678
	RB2	0.887			
	RB3	0.758			
Actual Usage (AU)	AU1	0.899	0.898	0.930	0.769
	AU2	0.900			
	AU3	0.920			
	AU4	0.780			
Continuous Purchase Intention (CPI)	CPI1	–	0.646	0.848	0.737
	CPI2	–			
	CPI3	0.828			
	CPI4	0.888			

Note. CR = Composite reliability; AVE = Average variance extracted.

Table 3
Results of discriminant validity testing.

Constructs	Mean	Standard Deviation	Correlation of constructs					
			AU	COM	CPI	RB	TB	TRI
AU	3.403	1.237	**0.877**					
COM	3.661	1.001	0.735	**0.912**				
CPI	3.090	1.040	0.730	0.539	**0.858**			
RB	3.080	1.007	0.078	0.165	0.130	**0.823**		
TB	2.929	1.105	0.403	0.428	0.212	0.679	**0.867**	
TRI	3.898	0.996	0.211	0.483	0.113	0.114	0.244	**0.862**

Note. The boldface diagonal values are the square roots of AVE.

structural model fit. Furthermore, the Q^2 (predictive correlation) values of actual usage (0.460) and continuous purchase intention (0.276) were greater than zero, as assessed with PLSpredict, confirming the strong predictive correlation of the exogenous latent variables. Four of the five hypotheses were supported. Regarding the innovation adoption factors, the positive relationship between compatibility and actual usage was confirmed (β = 0.645, p = 0.000). Conversely, trialability was found to negatively impact actual usage (β = −0.106, p = 0.043). As for the innovation resisting factors, tradition barriers were shown to negatively affect actual usage (β = −0.206, p = 0.002). Apart from this, H4 (β = 0.130, p = 0.057) was not supported as its p-value exceeded 0.05 threshold. Lastly, the relationship between actual usage and continuous purchase intention was significant at the 0.1 % level (β = 0.675, p = 0.000). Fig. 2 presents the results of the structural model tests.

Discussion

Based on the results obtained in the preceding section, the following conclusions were drawn: First, compatibility significantly enhances actual usage. This finding aligns with various studies in different fields where compatibility has been shown to positively influence adoption behavior, as seen in the adoption of technologies such as autonomous vehicles (Yuen et al., 2020), mobile banking (Al-Jabri & Sohail, 2012), and cloud-computing (Oliveira et al., 2014). This study confirms this association in the context of digital content subscription services. This positive relationship likely stems from the minimal learning curve for users, enabling seamless integration into daily life. It indicates that the current digital content subscription services are highly compatible with several devices and operating systems, thus meeting users' high expectations. The significance of integrating new technologies or services with consumer habits and lifestyles when popularizing them cannot be overstated. One of the key conclusions was the importance of preventing innovation from causing excessive changes in consumers' lives. For instance, simplifying user interfaces, maintaining a rich and up-to-date content library, and streamlining

Table 4
Analysis results of the model by path analysis.

H	Path	β	Sample Mean	Standard Deviation	t value	p-value	Result
H1	COM → AU	0.645	0.644	0.050	12.796	0.000	supported
H2	TRI → AU	−0.106	−0.094	0.053	2.023	0.043	supported
H3	TB → AU	−0.206	−0.184	0.067	3.094	0.002	supported
H4	RB → AU	0.130	0.094	0.068	1.906	0.057	unsupported
H5	AU → CPI	0.675	0.677	0.033	20.516	0.000	supported
				R^2		Q^2	
Actual usage				0.466 (46.6 %)		0.460	
Continuous purchase intention				0.308 (30.8 %)		0.276	

Note. COM = Compatibility; TRI = Trialability; TB = Tradition barrier; RB = Risk barrier; AU = Actual usage; CPI = Continuous purchase intention.
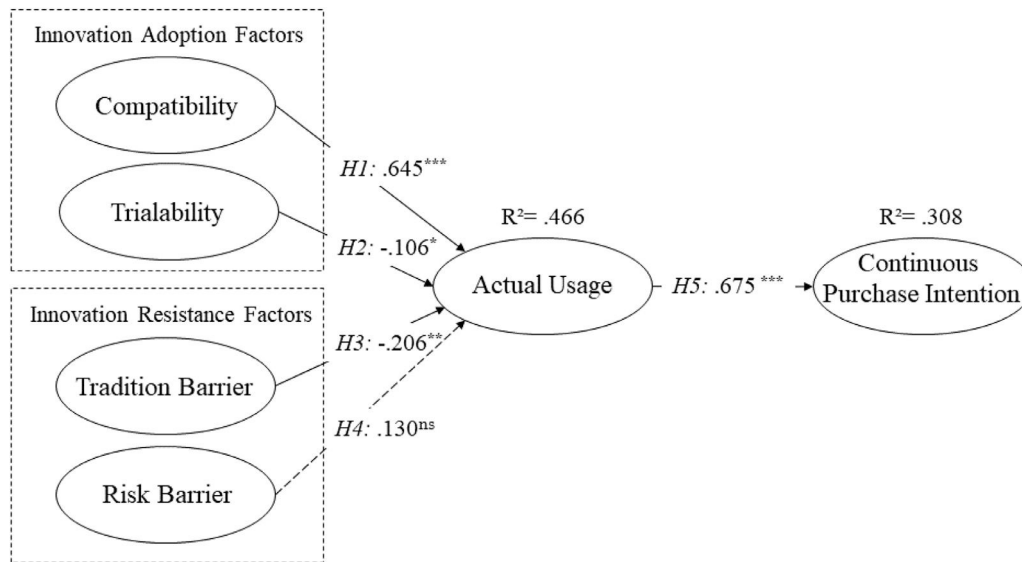
Fig. 2. Results of structural model test. Note. $^*p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; ns = non-significant.

payment processes to ease adoption. Second, in contrast to earlier studies that highlight the ability of trialability to drive innovation adoption (Atkinson, 2007; Park & Chen, 2007), our research reveals that trialability harms usage behavior. This finding reconfirms Deng et al. (2023) argument from a quantitative research perspective that poorly executed strategies can undermine subscription margins, which has been less pronounced in earlier research. Although some subscription platforms for digital content are available only for a fee, most paid platforms allow users to experience the service over a period of time. Since this study targets users who have paid for a digital content subscription, the more trial-oriented the paid content—that is, indistinguishable from free content—the less likely they are to continue paying. Therefore, it is not feasible to attract new users while ignoring their needs. Consequently, balancing paid and unpaid service offerings and considering ways to maintain sustainable revenue growth are essential. The analysis also revealed that the gap between paid and free digital service content will continue to increase. Netflix and Disney+, for example, attract subscribers by providing exclusive rights to television series, whereas Nintendo Online and Microsoft Office attract subscribers by providing exceptional services. As "paying for digital content" becomes more widespread, it is necessary to market services based on distinctive qualities. Third, tradition barriers negatively affected usage. This alignment with previous research (Leong et al., 2020; Moorthy et al., 2017) reinforces the robustness of the existing theories of innovation resistance, demonstrating that tradition barriers continue to play a critical role as key factors in different digital contexts. Changing the habits of subscribers while consuming free content can be a challenge. Owing to the preference for physical objects and the abundance of channels to access free digital resources, actual usage is decreasing. This finding suggests that digital content subscription service providers should adopt strategies to change their subscribers' consumption habits and reduce their resistance to new ways of accessing digital resources. As previously stated, a smart way to reduce subscribers' reliance on traditional content-access methods is to provide better services and meet the requirements for adequate services. To achieve this goal, programs tailored to younger users and those more receptive to digital subscriptions, alongside initiatives designed to provide security and convenience for older users, can help reduce resistance. Fourth, the risk barrier had no significant effect on actual usage. This indicates that subscribers do not perceive obvious risks of personal information leakage or the financial risks of payment data breaches during service use. Finally, actual usage had a clear positive impact

on continuous purchase intention. Although previous studies have explored various factors that drive continuous purchase intention such as user satisfaction (Lim et al., 2022) and consumption values (Iyengar et al., 2022), our findings further reveal that actual usage also plays a crucial role, thereby opening new avenues for studying the adoption process. This highlights the fact that users are more likely to renew digital subscriptions if they are satisfied with their service. This proves that subscription services are an effective means of ensuring continued usage. Providers must ensure that users are satisfied with digital content services, develop usage habits, and increase loyalty.

This study aligns with existing studies by emphasizing the importance of innovation adoption and resistance factors in the actual usage of digital content subscription services and the intention to continue purchasing. It also unexpectedly revealed that trialability, which was supposed to be a facilitating factor, has instead become a new resistance factor, indicating that the adoption process is more complex than previously understood owing to the unique business model of digital content subscription services.

Theoretical implications

This study confirms that innovation adoption and resistance factors influence actual usage, which in turn influences continuous purchase intention. From an academic standpoint, this study enriches the methodology of consumer behavior research. As most current research on consumer adoption of new technologies or products focuses on how innovations are driven, little attention has been paid to how innovations are impeded. Notably, the factors that drive and hinder innovation are not strictly opposed, and the complexity of consumer intentions and behaviors cannot be uncovered when studied separately. The major contribution of this study lies in reaffirming the possibility of combining the IDT and IRT. When verifying user acceptance of new technologies in the future, exploration can be conducted from two perspectives.

Another innovative aspect was the provision of a fresh perspective for research on digital content subscription services. Unlike other new technologies, it is interesting to note that trialability of digital content subscription services negatively affects actual usage. This also indicates that services with different characteristics may emerge with the evolving new technologies, and tailoring the appropriate research model to match reasonable attributes for these services requires a continuous understanding of user demands and timely

modifications. Furthermore, the empirical study proves the validity of the hypothesis in this research; therefore, the concept of this study can provide a complete understanding of how to promote the diffusion of innovative technologies or products, particularly digital innovations, in the future.

Practical implications

This study offers new insights into the development of digital content subscription services in Japan. Overall, for general users, free digital resource is typically more attractive (Chyi & Ng, 2020). For paying users, however, if they need to pay to access digital content, it becomes crucial to emphasize the added value of paid content, such as the absence of ads or exclusive content on the platform. Amid growing competition among digital content subscription platforms, this study determines that promoting actual usage behavior is key to fostering both subscription and long-term loyalty. To increase actual usage behavior, three strategies are necessary. First, ensuring high compatibility with users' existing technological environments is required while minimizing barriers to platform switching. Second, digital content platforms offering trial periods should avoid excessively long free trials, as this can hinder the conversion of users into paying subscribers. Platforms capable of directly attracting subscribers should highlight the distinct advantages over free resources to incentivize payment. Third, regardless of the trial period, the initial user experience must be optimized to allow users to quickly appreciate the service's value, thereby facilitating a gradual shift in traditional habits through high-quality content and a convenient user experience.

From a nonacademic standpoint, this study may have implications for all parties involved in digital content distribution. First, digital content providers are grappling with subscriber saturation, and one key challenge is to attract new users while retaining existing ones. Second, as the pandemic's impact on people's daily lives is diminishing, consideration must be given to the possibility that consumer demand for entertainment in the virtual world may decline. Consequently, the digital content subscription service market is transitioning, with many tried and failed solutions and a promising but uncertain future. Finally, suppose companies providing digital content subscription services can determine the factors that explain why Japanese consumers adopt or resist continued subscriptions from this study's findings. In this case, they can consider a comprehensive response to a crisis. In conclusion, in a consumer-centric era, it is crucial to weigh the multifaceted nature of consumer behavior and cater to consumers' needs to sell better innovative products or services.

Conclusion

This study investigates the factors influencing digital content subscription services in Japan using PLS structural equation modeling with SmartPLS4. Data were collected from 250 respondents and analyzed to examine innovation adoption and resistance factors as key constructs.

Owing to the low entry barriers and initial costs of digital content subscription services, users are easily attracted. Nonetheless, because of the fierce competition in the market, users can easily switch to other similar services. To retain users, it is necessary to enhance their stickiness through continuous updates and personalized recommendations. However, user stickiness may also be challenged by

emerging digital services. Consequently, user saturation and churn rates may occur faster than with physical products. According to Netflix's financial report for the first half of 2024, it emerged from the slump experienced during the COVID-19 pandemic and has seen new growth among subscribers. This success is attributed to timely adjustments in marketing strategies, such as incorporating ads to make subscriptions more affordable and attract new subscribers. Yet, intense competition from rivals indicates that this solution may not be a long-term strategy. Constantly innovating digital content subscription services and ensuring user adoption of these innovations presents significant challenges, marking the beginning of a new phase. This indicates a positive trend in the Internet age, in which most subscribers can better use digital resources. The future question is how to increase the digital literacy of nonsubscribers and convert them into new subscribers. This study's findings contribute to the literature on digital content subscription services by highlighting the unique challenges faced by the Japanese market.

To alleviate "subscription fatigue" in the post-pandemic era and to retain subscribers, it is necessary to promote a positive development trend and address the current obstacles encountered. By contrast, the digital boom continues in the Japanese market, but there is still a long way to go to unlock its enormous potential.

Limitations and future research

This study has two main limitations: a relatively homogenous sample and the oversight of multiple stages of innovation resistance. This study's sample was relatively small and homogeneous primarily because digital subscription services are still in their infancy in Japan. As mentioned in the "Data Collection" section, the participants were mostly young; thus, different results might have been obtained if more responses had been collected from people aged over 40 years. Therefore, collecting diverse samples may be advantageous for model construction. Future research could explore whether these findings are unique to Japan and how they differ from other locations in the Asia-Pacific region, where digital content is also developing. Another limitation is the failure to consider multiple stages of innovation resistance. According to Szmigin and Foxall (1998), consumers' resistance to innovation consists of three attitudes: rejection, postponement, and opposition. To better segment target consumers, this study would also like to incorporate three types of resistance into the model, if given the chance. In other words, it is worth exploring the possibility of integrating theories of innovation adoption and resistance into a more refined model.

CRediT authorship contribution statement

Jie Yang: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Youngkyung Kwon:** Writing – review & editing, Validation, Supervision, Conceptualization.

Appendix

Table A.1

Table A.1
Constructs and adapted sources of survey items.

Constructs	Items	Sources
Compatibility (COM)	COM1: Digital content subscription services are aligned with my habits of using the Internet. COM2: Digital content subscription services fit with my lifestyle. COM3: Digital content subscription services fit well with how I spend my leisure time.	Agag and El-Masry (2016), Yuen et al. (2020))
Trialability (TRI)	TRI1: I really won't lose much by trying free digital content subscription services because I have a lot of freedom to sign up and cancel. TRI2: I would like to try it thoroughly before deciding whether to adopt a digital content subscription service. TRI3: I want to try out the digital content subscription service before deciding whether I like it. TRI4: I would like to see a demonstration of the digital content subscription service before deciding to subscribe.	Atkinson (2007), Park and Chen (2007), Yuen et al. (2020))
Tradition Barrier (TB)	TB1: I am impatient with using digital content subscription services. TB2: Using digital content subscription services would require substantial changes to my daily routines. TB3: I prefer free digital content services to paid ones to save money.	Laukkanen (2016), Moorthy et al. (2017)
Risk Barrier (RB)	RB1: I am concerned that any personal information linked through digital content subscription apps or websites may be misused. RB2: I am afraid for faultiness in the function of digital content subscription apps or websites. RB3: I am afraid of unauthorized charges that are unreasonable or fraudulent.	Chung and Liang (2020), Sivathanu (2019)
Actual Usage (AU)	AU1: Every day, I make use of digital content subscription services. AU2: My life includes using digital content subscription services. AU3: I frequently use digital content subscription services (many times per week). AU4: I have utilized more than one digital content subscription service.	Al-Emran et al. (2020), Klopping and McKinney (2004))
Continuous Purchase Intention (CPI)	CPI1: If my current subscription expires, I will continue to renew it, not cancel it. CPI2: I intend to use desired digital content subscription services regardless of cost. CPI3: I intend to buy more digital content subscription services. CPI4: I intend to recommend digital content subscription services to others.	Kim, Y. and Kim, B. (2020), Moorthy et al. (2017))

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