Analyzing Consumer Adoption in Subscription Services: Perceived Benefits, Sacrifices, and Innovativeness

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Abstract

During the COVID-19 pandemic, the subscription economy has seen substantial growth, driven by consumer shifts towards safer and more personalized consumption methods. This study delves into the evolving landscape of subscription services, from traditional setups to integrated systems encompassing content, product deliveries, and rentals. Using the value-based acceptance model, the research evaluates how perceived benefits(such as usefulness, playfulness, and content variety) and sacrifices(including service complexity, disappointment, and perceived cost) affect intentions to use total subscription services, with perceived value serving as a mediator. Additionally, the study examines the influence of personal innovativeness on the relationship between perceived value and the intention to use these services. Employing regression analysis on data from 84 users, the results reveal a significant, positive moderating role of personal innovativeness and a direct, positive impact of perceived value on usage intentions. These findings highlight the importance of perceived value and innovativeness in driving adoption of subscription services, offering insights for enhancing consumer engagement in this dynamic sector.

요 약

본 연구는 전통적인 구독 서비스 모형에서 확장하여 콘텐츠, 제품 배송, 대여를 통합하는 시스템에 이르기까지 진화한 구독 서비스 환경을 조명한다. 이 연구는 가치 기반 수용 모델을 확장하여 지각된 혜택(유용성, 재미, 콘텐츠 다양성)과 희생(서비스 복잡성, 실망, 지각된 비용)이 전체 구독 서비스 사용 의도에 미치는 영향을 평가한다. 또한, 매개변수로의 지각된 가치의 역할을 실증하고, 개인의 혁신성이 지각된 가치와 서비스 사용 의도의 관계에 미치는 조절 효과를 조사한다. 84명의 응답에 대해 회귀분석을 수행한 결과, 개인의 혁신성이 유의미하고 긍정적인 매개 역할을 하며, 지각된 가치가 사용 의도에 직접적이고 긍정적인 영향을 미친다는 사실이 밝혀졌다. 본 연구 결과는 구독 서비스 채택을 촉진하는 데 있어 지각된 가치와 혁신성의 중요성을 강조하며, 정보 분야에서 소비자 참여를 향상시키기 위한 시사점을 제공한다.

Keywords

consumer behavior, intention to use, personal innovativeness, perceived value, subscription services, user adoption

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Ⅰ. Introduction

In recent years, the subscription economy has undergone a dramatic transformation, fueled in part by shifts in consumer behavior in response to the COVID-19 pandemic. As traditional shopping habits faced disruption, subscription-based models offering specialized goods and services gained prominence, providing a perceived safe and convenient alternative to in-person transactions[1]. This model extends beyond digital content to encompass a broad array of offerings, including product delivery, rental services, and integrated platforms that allow access to multiple services under a single subscription[2].

The growth trajectory of the subscription economy is notable, with the market size in Korea alone expanding from KRW 25.9 trillion in 2016 to KRW 40.1 trillion in 2020, indicating a robust consumer shift towards recurring service models[3]. The increase in subscription service utilization following the pandemic is a testament to the model's resilience and growing acceptance; data show a significant uptick in user engagement across various subscription types post-COVID-19[4].

Amidst this backdrop, this study aims to deepen the understanding of the factors that drive the adoption and continued use of total subscription services. Total subscription services, which consolidate multiple types of services into a single platform, represent a complex interplay of consumer preferences that span the convenience of access, cost considerations, and the breadth of content or services offered. The value-based acceptance model(VAM) serves as a foundation for this inquiry, examining how perceived benefits and costs influence user behavior in this specific economic model[5].

Additionally, this research explores the role of personal innovativeness in moderating the relationship between perceived value and the intention to use subscription services. Personal innovativeness, in this context, is conceptualized as the propensity of

individuals to adopt new technologies ahead of others, a trait that may significantly enhance user engagement with innovative subscription models[6]. By integrating these dimensions, the study seeks to provide a nuanced understanding of the dynamics at play in the burgeoning subscription economy.

This study differentiates itself from existing literature by providing a nuanced analysis of both perceived benefits and sacrifices within the framework of the VAM tailored specifically for the total subscription service context. Unlike previous research, which predominantly focused on singular aspects of user acceptance or the overall satisfaction derived from subscription services, this research delves into how both perceived benefits and perceived sacrifices interact to influence user intentions. Moreover, the inclusion of personal innovativeness as a moderating factor in the relationship between perceived value and intention to use offers a novel insight that has not been extensively explored in prior studies, thereby providing a deeper understanding of the dynamics in the rapidly evolving subscription economy.

Ⅱ. Literature Review and Hypothesis Development

2.1 Benefits

Usefulness is conceptualized as the degree to which a person believes that using a particular system would enhance their job performance[7]. Research in technology acceptance shows a strong correlation between perceived usefulness and the perceived value of technology, suggesting that usefulness enhances overall satisfaction and utility derived from the service[8]. Similarly, playfulness, defined as the extent to which the activity of using the technology is perceived to be enjoyable in its own right, independent of any performance consequences that may be anticipated[9], has been shown to significantly influence the perceived value by contributing to a

positive user experience, which enhances the perception of value[10]. Content variety in digital services offers varied information and user experiences, which have been found to broaden user satisfaction and perceived value due to meeting diverse needs and preferences[11]. Therefore, this study proposes the subsequent hypotheses.

Hypothesis 1-1. Usefulness has a positive effect on perceived value.

Hypothesis 1-2. Playfulness has a positive effect on perceived value.

Hypothesis 1-3. Content variety has a positive effect on perceived value.

2.2 Sacrifices

Service complexity is understood as the extent to which a service is perceived as difficult to use or understand[12]. Higher complexity lowers the perceived value of a service as it can frustrate users and deter continued use, thereby diminishing the perceived benefits[13]. Disappointment, characterized by feelings of dissatisfaction when expectations are not met[14], directly impacts perceived value. When users feel disappointed, their valuation of the service decreases as their anticipated outcomes are not realized[15]. Moreover, perceived cost, which involves the user's cognitive judgment of the expenditure associated with the service use, negatively affects perceived value when the costs outweigh the perceived benefits, leading users to deem the service as less valuable[16]. Thus, this study suggests the following hypotheses.

Hypothesis 2-1. Service complexity has a negative effect on perceived value.

Hypothesis 2-2. Disappointment has a negative effect on perceived value.

Hypothesis 2-3. Perceived cost has a negative effect on perceived value.

2.3 Perceived value

Perceived value is the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given[8]. This concept significantly influences the intention to use services as greater perceived value typically leads to higher likelihood of service adoption and sustained usage[17]. Essentially, when users discern high value in a service, they are more inclined to continue its use and recommend it to others. Therefore, this study suggests the subsequent hypotheses.

Hypothesis 3. Perceived value has a positive effect on intention to use total subscription services.

2.4 Personal innovativeness

Personal innovativeness, defined as an individual's propensity to embrace and use new technologies[18], is posited to amplify the link between perceived value and intention to use. This enhancement occurs because innovative individuals are more likely to appreciate and leverage the benefits perceived in new services, thereby strengthening their commitment to adopting these services[19]. In essence, for those who are naturally inclined towards new technologies, the perceived value translates more directly into usage intentions[20]. Consequently, this study proposes the subsequent hypotheses.

Hypothesis 4. Personal innovativeness strengthens the relationship between perceived value and intention to use total subscription services.
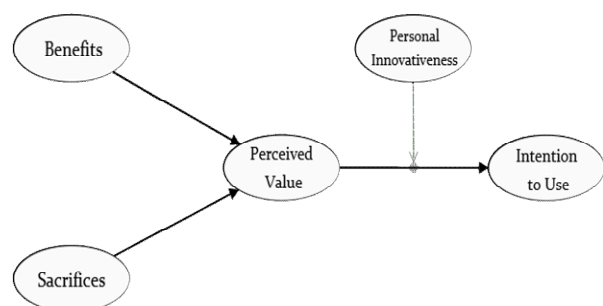
Figure 1 shows the research model.

Fig. 1. Research model

III. Methodology

3.1 Instrument development

This study developed the instrument based on the related works. Usefulness is defined by the extent to which users believe the total subscription service enhances their life, living standards, and usability in daily activities[21]. Playfulness reflects the enjoyable aspects of the service, capturing whether users find the service interesting, fun, and a source of enjoyment[22]. Content variety assesses the adequacy and diversity of content provided by the subscription service, including whether it meets users' needs and provides information they were previously unaware of[23]. Service complexity relates to users' perceptions of the difficulty and effort required to utilize the subscription service effectively[24]. Disappointment is gauged by users' satisfaction levels compared to their initial expectations, including regrets over their decision to subscribe[25]. perceived cost involves users' awareness and acceptance of the costs associated with the service[26]. Personal innovation measures an individual's tendency to adopt new technologies and systems, reflecting their proactive behavior towards new technological solutions[27]. Perceived value is evaluated by the user's assessment of the cost-benefit ratio, gauging whether the service provides value worth the expense[28]. Lastly, intent to use total subscription service captures the user's future intentions regarding the continued use of the service, recommendations to others, and anticipated satisfaction and value from continued use[26].

3.2 Data collection

The survey for this study was conducted online with users of total subscription services from Company A, Company B, and Company C in Korea. Data collection occurred in two phases: from April 29 to May 15, 2022, and from June 15 to July 5, 2022.

Out of 104 collected responses, 84 were considered valid after removing unreliable and insincere responses. The questionnaire was structured based on the value-based acceptance model[29] and comprised items measuring perceived benefits(usefulness, playfulness, content variety), perceived sacrifices(service complexity, disappointment, perceived cost), perceived value, intention to use, and personal innovativeness. Responses were elicited using a 5-point Likert-type scale, and the questionnaire included 37 items, with demographic questions using nominal and ratio scales.

Table 1 displays the demographic characteristics of the sample. Of the 84 responses, 23 (27.6%) were male and 61 (72.4%) were female, showing a higher number of female respondents. Age-wise, 1 respondent (1%) was between 10-20 years, 59 (70.5%) between 20-30 years, 19 (23.7%) between 30-40 years, 2 (2.8%) between 40-50 years, 1 (1%) between 50-60 years, and 1 (1%) over 60 years. Users preferred Rocket WoW (54.3%), Naver Plus (32.4%), and T Space Pass (13.3%). Selection criteria included price (13.3%), benefits (75.2%), recommendations (9.5%), and other reasons (2%). Duration of use varied: 27 (32.4%) less than 6 months, 23 (27.6%) less than 3 months, 19 (22.9%) less than 1 year, and 15 (17.1%) more than 1 year.

Table 1. Demographic characteristics

Category	Subgroup	Frequency	Percentage (%)
Gender	Male	23	27.6
	Female	61	72.4
Age	Less than 10-20 units	1	1
	Under 20s and 30s	59	70.5
	Under 30s	19	23.7
	Under 40s and 50s	2	2.8
	Under 50s and 60s	1	1
	60+ years old	1	1
Current total subscription service	Rocket Wow	46	54.3
	NAVER Plus Membership	27	32.4
	T Space Pass	11	13.3
Criteria for choosing subscription service	Pricing	11	13.3
	Benefits	63	75.2
	Recommendation by acquaintances	8	9.5
	Other reasons	2	2
Duration of using total subscription service	Less than 3 months	23	27.6
	Less than 6 months	27	32.4
	Less than 1 year	19	22.9
	1 year or more	15	17.1

IV. Results

4.1 Reliability and validity

In this study, reliability was assessed using Cronbach's alpha coefficient, a measure of internal consistency. A Cronbach's alpha value of 0.6 or higher is indicative of reliable internal consistency[30]. The results show that all variables achieved a Cronbach's alpha value above 0.6, confirming their internal consistency. This includes variables such as usefulness (0.804), playfulness (0.835), and personal Innovativeness (0.852), among others, indicating robust reliability across all constructs measured in the study.

In this study, factor analysis was performed on the variables to assess the explanatory power of the sub-items categorized under benefits(usefulness, playfulness, content variety) and sacrificies(service complexity, dissapointment, perceived cost). Principal Components Analysis(PCA) was utilized as the factor extraction method, with a factor loading threshold of 0.4 set to determine significance. The analysis revealed a Kaiser-Meyer-Olkin(KMO) measure of sampling adequacy of 0.843, indicating a good level of appropriateness for the factor analysis. Additionally, Bartlett's test of sphericity yielded a chi-square of 923.669, confirming the suitability of the data for structure detection. The results demonstrated a high cumulative explanatory power of 79.118%, with all factor loadings exceeding 0.4, affirming that the independent variables were significantly explained by the identified factors.

Furthermore, factor analysis was extended to the moderator and dependent variables-personal innovativeness, perceived value, and intention to use total subscription services-to evaluate their explanatory potential. Using PCA, the factor analysis results indicated a KMO measure for the dependent variables at 0.796, signifying an adequate sample for the analysis, and a Bartlett's test result with a chi-square of 364.353, evidencing significant inter-correlations

among the variables. The cumulative explanatory power reached 80.011%, indicating a strong explanatory capacity of the model. The test results of reliability and validity are described in Table 2.

Table 2. Reliability and validity

Construct	Item	Factor loading	Cronbach's alpha
Usefulness	Usefulness1	0.854	0.804
	Usefulness2	0.733	
	Usefulness3	0.781	
	Usefulness4	0.616	
Playfulness	Playfulness1	0.867	0.835
	Playfulness2	0.618	
Content variety	Content variety1	0.816	0.821
	Content variety2	0.882	
	Content variety3	0.68	
Disappointment	Disappointment1	0.804	0.914
	Disappointment2	0.748	
	Disappointment3	0.646	
Service complexity	Service complexity1	0.840	0.906
	Service complexity2	0.776	
	Service complexity3	0.711	
	Service complexity4	0.878	
Perceived cost	Perceived cost1	0.857	0.734
	Perceived cost2	0.773	
Perceived value	Perceived value1	0.620	0.678
	Perceived value2	0.910	
Personal innovativeness	Personal innovativeness1	0.708	0.852
	Personal innovativeness2	0.863	
	Personal innovativeness3	0.904	
	Personal innovativeness4	0.889	
Intention to use	Intention to use1	0.914	0.744
	Intention to use2	0.844	

4.2 Regression analysis

In this study, mulvariate regression analysis was employed to examine the relationships between independent variables and perceived value, as well as the connection between perceived value and the intention to use total subscription services.

The choice of regression analysis over more complex methodologies such as AMOS or PLS-SEM was driven by the specific nature of the research questions, which focused on direct relationships without the need for modeling latent variables or handling multiple interrelated dependencies. Multivariate regression is advantageous in its straightforward interpretation and robustness in situations where the focus is on understanding direct, unmediated effects between variables[31]. This approach is particularly effective for the clear, concise testing of hypotheses in studies where the theoretical framework does not necessitate the complexity of structural equation modeling, thus providing direct insights into the predictive power of independent variables on the dependent variable[32].

The regression results regarding the effects of benefits and sacrifices on perceived value are summarized in Table 3. Usability (β=.178, p=.128), playfulness (β=.106, p=.272), and content variety (β=.086, p=.357) did not show statistically significant positive effects on perceived benefits, leading to the rejection of Hypotheses 1-1, 1-2, and 1-3.

Table 3. Regression results (Effects of independent variables on perceived value)

Model	Normalization factor Beta	t	p	VIF
Usefulness	.178	1.538	.128	2.161
Playfulness	.106	1.106	.272	1.491
Content variety	.086	.927	.357	1.391
Service complexity	−.099	−.896	.373	1.958
Disappointment	−.065	−.591	.556	1.928
Perceived cost	.426	4.160	.000	1.686
R2 = 0.522, F = 13.997, p−value = 0.000, Durbin−Watson = 2.160.				

Similarly, service complexity (β=-.099, p=.373) and disappointment (β=-.065, p=.556) did not demonstrate significant negative impacts on perceived benefits, resulting in the rejection of Hypotheses 2-1 and 2-2. However, perceived cost (β=.426, p=.000) showed a significant positive effect, contrary to the expected negative influence, which calls for a reevaluation of Hypothesis 2-3.

Similarly, we validated the effects of perceived value on intention to use total subscription services (Table 4). Perceived value positively affects intention to use (β=.622, p=.000).

Moreover, the moderating effect of personal innovativeness on the relationship between perceived value and intention to use was examined(Table 5 and 6).

Table 4. Regression results (Effects of perceived value on intention to use)

Model	Normalization factor Beta	t	p	VIF
Perceived value	.622	7.199	.000	1.000
R2 = 0.387, F = 51.831, p−value = 0.000, Durbin−Watson = 2.014.				

The results from Model 3, which included the interaction term perceived value personal innovativeness, showed an additional variance explained (R^2 Change) of .030, with an F change of 3.316 and a p-value of .042, indicating a significant moderating effect. This analysis confirms that personal innovativeness strengthens the impact of perceived value on the intention to use total subscription services. The respective Beta coefficients and statistical significances illustrate the incremental contributions of each predictor and their interaction in the model.

Table 5. Moderating rffects of personal innovativeness (Model statistics)

Model	R2	Adjusted R2	R2 change	F change	P change	P	Durbin−watson
1	.152	.142	.152	14.708	.000	.000	
2	.248	.230	.096	10.375	.002	.000	1.894
3	.278	.251	.030	3.316	.042	.000	

Further, personal innovativeness significantly moderates the effects of perceived value on intention to use (β=.198, p=.002), supporting Hypothesis 4.

Table 6. Moderating effects of personal innovativeness (Coeffficients)

Model		Normalization factor	t	p	VIF
		Beta			
1	Perceived value	.325	3.298	.001	1.044
	Personal innovation	.317	3.221	.002	1.044
2	Perceived value	.409	3.804	.000	1.283
	Personal innovation	.351	3.551	.001	1.082
	Perceived value × Personal innovativeness	.198	1.821	.002	1.317

Ⅴ. Discussion

The discussion of the regression analysis results from the study provides a comprehensive insight into how various factors influence the intention to use total subscription services. Each factor's impact is discussed in light of previous research, offering a detailed interpretation and critical evaluation of the findings.

The effect of usefulness in this study, though positive, was not statistically significant. This finding diverges from the well-established link between perceived usefulness and increased user adoption found in earlier technology acceptance research[7][8]. The diminished impact in this study could suggest that in the context of subscription services, users may prioritize other factors over traditional notions of usefulness, or that the perceived usefulness might be so integral to the decision to subscribe that it does not stand out as a distinct influencer in mature markets.

Similarly, playfulness showed a positive influence on intention to use, though it was not statistically

significant. This is contrary to studies that highlighted the critical role of enjoyment and fun in driving engagement with digital platforms and services[9][10]. The relatively lower impact in this context could imply that while enjoyable features are appreciated, they are not the primary drivers for long-term use of subscription services. This finding encourages a focus on functional benefits over purely entertaining features.

The role of content variety was similarly understated in its significance, echoing the trends observed for usefulness and playfulness. While variety is generally seen as a positive attribute that enhances user satisfaction and perceived value[11], its lower impact might suggest that simply offering a wide range of content is not enough. Consumers may seek out not just variety but also relevance and personalization in the content offered by subscription services, indicating a need for providers to tailor their content strategies more closely to user preferences and behaviors.

Service complexity had a negative but non-significant impact on usage intentions, consistent with findings that complexity can deter user adoption and satisfaction[12][13]. Although not statistically significant, the negative direction of this relationship suggests that reducing complexity remains crucial in enhancing user experience and facilitating adoption, especially in an increasingly competitive subscription market where ease of use can be a key differentiator.

Interestingly, disappointment also did not show a statistically significant effect, although the direction was negative. Studies have shown that unmet expectations can severely impact user satisfaction and their continued use of a service[14][15]. The lack of statistical significance could suggest that while disappointment affects user sentiment, its direct impact on the decision to continue using a service may be buffered by other factors such as cost or the availability of alternatives.

Perceived cost was interestingly found to have a strong positive impact on usage intentions, which

might seem counterintuitive.

However, this can be interpreted as users finding the service valuable enough to justify the cost, a phenomenon that aligns with research suggesting that perceived fairness in pricing enhances perceived value and intention[16]. This suggests that when users perceive the cost as commensurate with the value received, it positively influences their decision to continue using the service.

Perceived value itself showed a strong and significant positive relationship with the intention to use, which is consistent with a vast body of literature[8][17]. This reaffirms the theory that higher perceived value leads to greater adoption likelihood and sustained usage, highlighting it as a crucial lever for marketers to focus on.

The analysis of the moderating effect of personal innovativeness on the relationship between perceived value and intention to use subscription services reveals nuanced insights. Both perceived value and personal innovativeness significantly enhance usage intentions, confirming foundational theories that value recognition increases usage likelihood[17], while personal innovativeness drives early adoption of new technologies[18]. Furthermore, the interaction between perceived value and personal innovativeness significantly amplifies this effect, suggesting that for more innovative individuals, the value perceived in subscription services more effectively translates into actual usage intentions. This emphasizes the importance of aligning service offerings with the psychological profiles of consumers, particularly those who are more innovative, to enhance service adoption and retention[19][20].

VI. Conclusion

6.1 Theoretical contribution

This study enhances the understanding of factors influencing the intention to use total subscription services, extending the value-based acceptance model (VAM) in a novel context-the rapidly evolving subscription economy. The research contrasts sharply with previous studies by focusing on the complex interplay between perceived benefits and sacrifices, a perspective not thoroughly explored in traditional models of technology acceptance. Most prior studies in the realm of subscription services have centered predominantly on consumer satisfaction and continuous usage intention, often overlooking the impact of personal innovativeness and the dual aspects of perceived benefits and perceived costs[14][24].

A significant theoretical contribution of this work is the identification and integration of personal innovativeness as a moderating factor in the relationship between perceived value and usage intention. While earlier works have recognized the role of innovativeness in technology adoption, they have not explicitly linked it to subscription services in the context of perceived value[8][9]. This study's findings suggest that the higher the personal innovativeness, considering perceived value, the greater the acceptance and usage of new services, highlighting a nuanced dimension that previous studies could not unveil.

For scholars, this research suggests revisiting and possibly revising existing technology acceptance models to incorporate variables specific to the subscription economy. Future research could further dissect the role of individual innovativeness in different service sectors, potentially extending beyond digital and subscription-based platforms to include traditional service models. This study opens new avenues for exploring how individual differences in technology adoption can affect consumer behavior in various economic sectors.

6.2 Managerial implication

This research offers valuable insights for various

stakeholders in the burgeoning subscription economy. For service providers and product manufacturers, the findings underscore the importance of aligning service attributes with the innovative tendencies of target customers. Companies should design subscription services that not only meet functional needs but also provide novelty and ease of use, characteristics that resonate with innovative users.

Managers of subscription platforms can leverage this information to tailor marketing strategies that highlight both the practical benefits and the innovative aspects of their services. For instance, showcasing how a subscription service continuously updates its offerings can attract consumers with high personal innovativeness. Additionally, the emphasis on personal innovativeness suggests that service subscribers who are early adopters could be used effectively as brand ambassadors to influence the wider market.

For service subscribers, the results of this study can guide their choices. By understanding their own preferences for innovation, subscribers can select services that match their willingness to adopt new technologies and services, thereby enhancing their overall satisfaction and long-term engagement with the service. Overall, this study not only deepens the theoretical understanding of technology acceptance but also provides actionable strategies that stakeholders across the subscription service spectrum can apply to foster growth and customer retention.

6.3 Limitations and future research directions

This study's limitations primarily stem from its focused application of the VAM and the incorporation of personal innovativeness. While this approach enriches the understanding of factors influencing the adoption of new subscription services, it does not account for the varying characteristics of different subscriber groups beyond age, nor does it explore other independent variables that may affect usage intentions. Additionally, the research is somewhat constrained by its concentration on existing users without examining the motivations behind why new users might choose to adopt or reject subscription services. Future research could broaden this scope by incorporating a more diverse set of subscriber demographics and by examining the interplay between additional independent variables and perceived value. Studies could also investigate the specific benefits of various total subscription services that drive customer acquisition and retention, particularly in response to evolving market demands post-COVID-19. Furthermore, expanding the research to include a comparison of international markets could provide deeper insights into global consumer behavior trends. Finally, the current study's measurement of the "intention to use" construct, which combines continued use of the service, recommendations to others, and anticipated satisfaction and value, may conflate distinct concepts such as recommendation intent and satisfaction, potentially leading to issues with the validity of the measurement tool. Future research should consider separating these components into distinct constructs to ensure clarity and enhance the precision of the measurement instruments used.

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