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The Moderating Effect of Self-Efficacy on Fitness Use Innovativeness and Usage Pattern

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Abstract: Marketing researchers agree that use innovativeness leads to variety-seeking behavior in service usage in service contexts. As fitness consumers are high-frequency users, user behavior can be enriched by exploring the moderating effect of self-efficacy. This study explores the moderating effect of self-efficacy on the relationship between fitness use innovativeness and usage patterns (usage variety and usage frequency), and investigates their mediation effects on satisfaction and revisit intention. A sample of 234 participants from one of the largest public fitness centers was employed to test the conceptual framework. The findings show that fitness use innovativeness has a positive relationship with usage variety but has no effect on usage frequency. However, self-efficacy demonstrated its moderation effects on the relationships between fitness use innovativeness and usage variety and usage frequency. The evidence of the moderation effect of self-efficacy conforms to the theory of the use-diffusion model. We finally developed a matrix of fitness innovators to illustrate related managerial implications for each segment.

Keywords: use variety; use frequency; moderating effect; satisfaction; revisit intention

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1. Introduction

The health club industry offers leisure services that are highly facility driven [1]. With more than 200,000 health clubs worldwide and 162 million members, this highly competitive industry is valued at approximately USD 83.1 billion [2]. Health clubs are required to frequently reinvent their services to meet consumers' novelty needs [3], and this results in managers exploring better approaches to satisfy customers' expectations [4]. Today, customers of health clubs have become high-frequency users (e.g., in the United States, 78% of individuals visit a gym several times a week [5] and seek novelty value [6]). Studies confirmed that innovative uses of products and services influence consumers' emotions [7] and repurchase intention [8].

Consumers' perception of the novelty of services differs by their adaptation effects, such as visit frequency and duration of stay. We defined fitness use innovativeness (UI) as a user's novelty tendency toward fitness service usage, because one's use innovativeness is considered to be a personal trait toward new product or service usage [9–12]. Thus, their service satisfaction is likely to change once fitness customers are familiar with the facilities or equipment. This study extends the concept of use innovativeness to provide further managerial knowledge on maintaining adequate satisfaction among health-club customers.

Using an existing product or service in a new way is known as use innovativeness [11]. A new and creative approach to a product or service usage can be exclusive or unique to the usage context [11]. The use of a previously adopted product in a new way may resolve the novel consumption problem [9]. Use innovativeness affects usage pattern through,

for example, rate and variety of usage [12]. Use innovativeness leads to variety-seeking behavior in the usage context. Consumers with higher use-innovativeness levels tend to develop higher creativity and may attempt diverse applications of a product [12,13]. Furthermore, frequent use owing to consumer innovativeness increases customer dexterity in and knowledge about product usage. This dexterity satisfies the desire for innovation use and could lead to feelings of satisfaction [7].

Usage patterns are conceptualized on the basis of two distinct dimensions: usage frequency and variety [12,14]. Usage frequency (UF) refers to the time of product or service usage, and usage variety (UV) is the ways in which a product or service is used. For example, in the context of health club customers, UF is the number of times they visit health clubs in a given period (i.e., week, month, or year) and UV is the different ways in which customers use facilities or equipment. Studies evidenced that greater use innovativeness results in higher usage variety [12,13,15]. Ram and Jung [13] found that UI positively affects UF and UV in the context of home electronics use (e.g., VCR, microwave oven, and food processor). Goldsmith and Hofacker [15] stated that consumer innovativeness positively influences use frequency. Shih and Venkatesh [12] found a positive relationship between use innovativeness and usage variety, but there was no significant relationship with usage frequency in the context of technology use diffusion. Son and Han [16] also found that Internet Protocol Television (IPTV) users' innovativeness has a positive effect on rate and variety of use. However, there is little existing research on the influence that self-efficacy levels have on use innovativeness and usage patterns in highly facility-driven contexts, such as in fitness centers.

Self-efficacy theory was employed to explain and adapt learning behavior [17]. Bandura defined self-efficacy as: 'beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments' [18], reflecting the belief that an individual has in his/her ability to perform a specific task. Self-efficacy is operationally conceptualized as a personality trait [19] and is critical for creative function [20].

It also refers to individuals' beliefs in their ability to successfully perform a task or demonstrate a behavior. Behavior researchers have turned their attention to self-efficacy and its effects on, for example, computer/Internet usage [21–23], the adoption of high-technology products [24], and innovations [25]. Self-efficacy perceptions have been found to influence decision behaviors [17] related to undertaking certain efforts, the persistence in attempting these behaviors [26], and actual performance with respect to such behaviors [26,27].

Self-efficacy theory is also applied to the context of sports, and in particular, sports performance [28–30]. These studies report a positive relationship between self-efficacy and athletes' performance. Kavussanu et al. [30], for example, found that the self-efficacy of basketball players positively affects their performance. Similarly, Feltz et al. [29] suggested that self-efficacy is positively correlated with diving performance. Anstiss et al. [28] stated that the culmination of experiences, the overcoming of challenges and adversity, and a sense of physical familiarity influence the self-efficacy beliefs of endurance athletes. However, the sports literature rarely explores the effects of self-efficacy on use diffusion behavior.

Scholars have examined the moderating role of self-efficacy on individuals in different contexts. For example, Jex and Bliese [31] found that self-efficacy has a moderating effect on employee stress and work. Romero-Moreno et al. [32] demonstrated the moderating role of self-efficacy in the relationship between family caregivers' burden and distress. However, the conceptualization of self-efficacy as a moderator in the relationship between fitness use innovativeness and fitness usage patterns is unfounded. Therefore, the aim of this study was to clarify the moderating role of self-efficacy on the above relationships in the contexts of facility-driven environment, and to evidence if this effect conforms to the use-diffusion theory. This clarification could further enhance our knowledge in managerial applications of highly facility-driven services such as fitness centers.

2. Conceptual Development

Two types of diffusion models theoretically bridge individual innovativeness and usage patterns. Innovativeness refers to the different reactions of individuals to a new idea, practice, or object due to differences in their innovativeness [33]. One is the adoption-diffusion (AD) model, and the other is the use-diffusion (UD) model [12]. The AD model centers on rate and time of adoption, whereas in the UD model, the variables of interest are the rate of use and variety of use. UD researchers viewed innovativeness as one of use-diffusion determinants to influence usage pattern and use-diffusion outcomes in the population of intense users or specialized users [12]. As fitness service is a high-usage-frequency and high-variety service industry [5], we adopted the UD model and propose use innovativeness as one of the determinants of fitness use diffusion, leading to influences on usage pattern (variety and frequency) and use outcomes. Usage patterns can be contrasted by several characteristics. First, usage frequency may be driven predominantly by task requirements of the consumer, whereas usage variety depends on both the variety in features offered by the product and the variety of usage situations. Second, there are likely to be temporal variations in the two dimensions.

Hirschman [9] pointed out that inherent novelty seeking can be an antecedent of usage variety. In the other words, one's use innovativeness tendency may lead to his/her variety-seeking behavior in the usage context. Ram and Jung [13] found that usage variety is influenced by innovativeness, whereas usage frequency is less likely to be influenced. Shih and Venkatesh [12] maintained that the higher user's use innovativeness tends to developing higher variety use of the home technology. Chang et al. [34] found fitness consumers' innovativeness positively influences their revisit frequency and duration of stay. Therefore, this study proposes the following hypothesis:

Hypothesis 1. *Fitness use innovativeness may positively affect usage variety.*

Hypothesis 2. *Fitness use innovativeness may positively affect usage frequency.*

Efficacy beliefs facilitate the effective and integrated use of complex information. Customers with higher self-efficacy levels are significantly better at achieving complex information integration and learning nonlinear probabilities and contingencies [27,35]. Self-efficacy can increase the frequency of information seeking [36]. Such information inquiry can evoke one's curiosity about the services they use. A customer observing situations or others' behaviors for cues as feedback may serve as part of a learning process [18]. Furthermore, self-efficacy has a strong effect on the degree to which people want more new challenges in their jobs [18]. Customers with higher self-efficacy levels tend to be more confident in modeling others' behaviors and using equipment in an innovative way than those customers with lower self-efficacy levels. Thus, it is to be expected that fitness customers with lower self-efficacy levels would not react as favorably to high levels of usage variety and frequency in their fitness tasks as those with higher self-efficacy levels.

Drawing on Shih and Venkatesh's [12] UD model and social cognitive theories, this study proposes that self-efficacy has a moderation effect between use innovativeness and usage pattern. That is, under the same level of fitness use innovativeness, a fitness customer with higher self-efficacy levels tends to report greater usage frequency and usage variety for a fitness product/service.

Hypothesis 3. *Self-efficacy moderates the relationship between fitness use innovativeness and usage pattern.*

Hypothesis 3-1. *Self-efficacy positively moderates the relationship between fitness use innovativeness and usage variety.*

Hypothesis 3-2. *Self-efficacy positively moderates the relationship between fitness use innovativeness and usage frequency.*

Since the early 1970s, consumer satisfaction has received considerable attention in the marketing literature, which has depicted the concept as reasonable, reliable, and distinct from related constructs such as product performance and service quality [37]. Consumer satisfaction is defined as consumers' psychological response to their positive evaluations of consumption outcomes in relation to their expectations [37].

Research suggests that the ability to successfully use a product results in higher satisfaction (e.g., [38]). This study investigates the influences of usage variety and frequency on satisfaction. By fulfilling the intrinsic need to seek diversity from product functions, usage variety influences satisfaction appraisal in the context of personal computer and camera usage [39]. Ram and Jung also demonstrated that greater usage variety results in lower performance and usage disconfirmation and higher satisfaction.

Bolton and Lemon [40] documented that service usage pattern and satisfaction are highly correlated and the relationship is dynamic. In other words, consumers tend to compare actual usage with standard expectations, and favorable comparisons increase satisfaction. Similarly, in the context of product and service usage, consumers have certain expectations regarding product performance. In the case of high usage behavior, actual usage exceeds prior expectations and leads to greater product or service satisfaction. According to Ram and Jung [39], usage frequency plays a significant role in the satisfaction appraisal for durable product usage (e.g., microwave ovens, VCRs, and food processors). Shih and Venkatesh [12] also pointed out that usage patterns (variety of use and rate of use) influence consumers' satisfaction with technology. Shukla [41] focused on vehicles and televisions as research objects and reported that 86.33% respondents used their vehicles on a daily basis, almost all respondents purchased their vehicles a year ago, and only 4% were dissatisfied with their vehicles. In addition, 96.40% of respondents watched their televisions every day, and only 3.6% were dissatisfied. From the discussion above, it can be concluded that usage frequency positively affects satisfaction. In other words, high frequency of product usage indicates that customers can confirm the performance expectation of the product or service being purchased or used. Accordingly, this study proposes the following hypothesis:

Hypothesis 4. *Usage variety positively affects satisfaction.*

Hypothesis 5. *Usage frequency positively affects satisfaction.*

Satisfaction is conceptually an antecedent of repurchase intentions [42–44]. Satisfied customers tend to be highly committed to service organizations and their services. In contrast, consumers who are less satisfied tend to complain more and are less likely to repurchase [44]. Kim and Moon [45] report that greater feelings of pleasure, for example, when customers are satisfied with a restaurant, increase their intentions to revisit. Kuo et al. [46] showed that customer satisfaction positively influences post-purchase intentions in the context of mobile value-adding services. That is, higher levels of consumer satisfaction lead to increased repurchase intentions. In sports studies, Brown et al. [42] evidenced a positive relationship between event satisfaction and future intention to watch swimming events. García-Fernández et al. [43] found that customer satisfaction with health clubs positively affects their intention to revisit. Thus, the following hypothesis is proposed:

Hypothesis 6. *Satisfaction positively affects revisit intentions.*

3. Research Methodology

3.1. Participants and Data Collection

To test the hypotheses, we collected data from Taipei Nangang Fitness center for the following reasons. First, the Nangang Fitness center has a fitness center that can accommodate 90 customers and has more than 30 types of equipment. Second, it is government certified and OT (operation transfer) by the China Youth Corps. Third, there are 12 sport centers across various administrative areas in Taipei, and Nangang Fitness center is one of the community-based fitness centers. The majority of its customers live nearby, and thus, can easily visit the center. Finally, the fitness center is the second largest in Taipei and reports a high customer inflow. Therefore, the fitness center was deemed suitable for the questionnaire survey. We distributed questionnaires on a weekday (Friday) and weekends (Saturday and Sunday) to ensure sample variety. Respondents were offered assistance in filling in the questionnaire if they believed the measuring items to be unclear. A total of 306 questionnaires were administered to customers after they finished using the center's equipment. The final sample after excluding invalid ones with missing and biased responses consisted of 234 questionnaires.

3.2. Measures

A 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree), was employed for all of the measures. The fitness use innovativeness scale applied in this study was taken from Shih and Venkatesh [12]. The items include "I use fitness equipment in more ways than most people do (UI1)", "I am comfortable working on fitness equipment that is different from what I am used to (UI2)", and "I am creative with fitness equipment (UI3)."

This study employed Ram and Jung's [14] usage variety scale and measured this construct on the basis of the 20 most commonly used fitness devices in the fitness center. The equipment includes five cardio machines (elliptical cross trainers, sitting bike, upright bike, treadmill, and spinning bike) and 15 weight training machines (mechanical horseback riding, climbers, leg press, pec machine or butterfly, tricep push-down machine, shoulder press machine, back machine, seated chest press, lat machine with a mid-row, single tier dumbbell, weight lifting machine, narrow grip chin-ups, leg curl machine, WAB board, and chest mid-row). Usage variety is measured as the number of times the 20 devices were used.

Usage frequency refers to the number of times a product is used (usage time) regardless of the types of applications [14]. The scale adopted from Ram and Jung [14] was used to measure weekly frequency (time) and duration (hour) of stay for each visit.

The self-efficacy scale was taken from Compeau and Higgins [21]. The items include "I saw someone else using it before trying it out myself (SE1)", "I have used similar fitness equipment to do the same exercise (SE2)", "I could call someone for help if I got stuck (SE3)", "Someone else helped me get started (SE4)", "I had a lot of time to complete the exercise using the fitness equipment provided (SE5)", and "Someone showed me how to do it first (SE6)."

The satisfaction scale was taken from Wu and Li [47]. The items include "The equipment at the center meets my fitness requirements (SAT1)", "In general, using the equipment at the fitness center has been a wonderful experience (SAT2)", "The fitness center provides diverse equipment (SAT3)", and "In general, the equipment at the fitness center satisfies me (SAT4)."

Finally, the revisit intention scale was taken from Zeithaml et al. [48] and Maxham [49]. The items are "I would like to revisit this fitness center in the near future (REV1)", "I will continue to use the fitness equipment at this fitness center (REV2)", and "This fitness center would be my first choice over any other fitness center (REV3)."

Two bilingual team members translated all responses from English into traditional Chinese. The translated responses were then back-translated into English to ensure content

validity [50]. Experts in sporting management also reviewed and modified the questionnaires where necessary to ensure their face validity.

All means of the constructs were between 2.31 (usage frequency) and 6.05 (revisit intention). The standard deviations were from 0.93 (revisit intention) to 2.8 (usage variety). Normal distribution of the variables was achieved with skewness (0.88) and Kurtosis (0.99) falling into an acceptable range (−1.96 to +1.96) [51]. Cronbach's alphas of the latent variables were greater than 0.8, and all constructs were higher than 0.8, which showed good reliability of the constructs.

3.3. Data Analysis

The hypotheses were examined using a structural-equation-modeling approach including the partial least-square (PLS) procedure with Smart-Pls2.0 [52] and SPSS Statistics 20.0. The common criteria were adopted from Harman [53]. The choice of PLS-SEM instead of covariance-based SEM (CB-SEM) was justified by referring to Hair et al. [54]. First, given that the constructs' measurement properties are less restrictive with PLS-SEM, constructs with fewer items, such as one item measuring use variety and another measuring use frequency, can be used, whereas CB-SEM requires more items. Second, this study is more exploratory than confirmatory. Thus, PLS-SEM was an appropriate alternative to CB-SEM.

4. Findings

4.1. Participants' Characteristics

The participants' characteristics of gender, age, duration of visit, and weekly usage opinion were categorized. Among the participants, 64.1% were male and 35.9% female. Most respondents were evenly distributed by age: 17.1% were below 20 years-old, 49.1% were 21–30, 27.8% were 31–40, 5.1% were 41–50, and 0.9% were older than 50. More than 68% of respondents spent 1–2 h at the fitness center: the majority of the respondents visited the center twice a week (35.9%), followed by once a week and three times a week (25.2%), four times a week (9.8%), and five times a week (3.8%).

4.2. Descriptive Analysis

Before conducting PLS-SEM, the assumptions of regression analysis, such as multicollinearity, linearity, and normality, were examined. Multicollinearity was measured by tolerance (less than 0.2) and variance inflation factor (VIF) (above four) [55]. The results show that no multicollinearity existed, as the lowest value of tolerance is 0.68, and the highest value of VIF is 1.46. The linearity assumption was correct, as the linearity test showed a significance level of 0.01. Normal distribution of all variables was achieved: skewness (0.88) and Kurtosis (0.99) feel into acceptable ranges (−1.96 to +1.96) [51]. Table 1 presents the means and standard deviations of the original variables.

Table 1. Mean, standard deviations, and standardized loadings of manifest variables.

Construct	Indicators	Mean	Standard Deviation	Loading
Use innovativeness	UI1	4.27	1.57	0.75 ***
	UI2	3.90	1.39	0.77 ***
	UI3	4.01	1.55	0.79 ***
Self-efficacy	SE1	5.10	1.22	0.74 ***
	SE2	5.38	1.12	0.82 ***
	SE3	5.65	1.16	0.85 ***
	SE4	5.82	1.16	0.85 ***
	SE5	5.45	1.16	0.77 ***
	SE6	5.84	1.13	0.84 ***
Usage variety		5.57	2.80	n.a.
Usage frequency		2.31	1.07	n.a.

Table 1. *Cont.*

Construct	Indicators	Mean	Standard Deviation	Loading
Satisfaction	SAT1	5.38	1.07	0.84 ***
	SAT2	5.62	1.00	0.81 ***
	SAT3	5.60	1.07	0.86 ***
	SAT4	5.55	1.03	0.88 ***
Revisit intention	REV1	6.05	0.98	0.93 ***
	REV2	6.00	0.93	0.94 ***
	REV3	5.59	1.19	0.85 ***

*** denotes significance at the 0.001 level (two-tailed test), n = 234, n.a. = not applicable.

4.3. Measurement Model

All Cronbach's alphas exceed the 0.7 threshold and are generally greater than 0.7. The composite reliabilities of all the latent variables are greater than 0.8, and all constructs are higher than 0.8. The average variance extracted (AVE) is also higher than 0.6, indicating that the variance captured by each latent variable is significantly larger than the variance attributable to a measurement error. In other words, the constructs have high unidimensionality and convergent validity.

Discriminant validity is assessed on the basis of whether each latent variable shares more than one variable with its own measurement variables or other constructs [56]. We compare the square root of the AVE for each construct with the correlations of all other constructs in the model. A correlation between constructs exceeding the square roots of their AVE indicates that they may not be sufficiently discriminable. We can observe that the square roots of AVE are always greater than the absolute correlations between the constructs. AVE ranges from 0.77 to 0.91 (see Table 2). We conclude that all the constructs report acceptable validity.

Table 2. Correlations between latent variables and square roots of average variance extracted.

	UF	RI	SAT	SE	UI	UV
Usage Frequency (UF)	*n.a.*					
Revisit Intention (RI)	0.17	*0.91*				
Satisfaction (SAT)	0.28	0.70	*0.85*			
Self-efficacy (SE)	0.34	0.52	0.55	*0.82*		
Use Innovativeness (UI)	0.22	0.14	0.23	0.36	*0.77*	
Usage Variety (UV)	0.27	0.25	0.27	0.28	0.29	*n.a.*

The italicized values denote the square root of the average variance extracted, n.a. = not applicable.

4.4. Structural Model

Next, the path significances were tested using bootstrapping resampling with 300 subsamples. Table 3 and Figure 1 present the properties of the causal paths, including the path coefficients and p-values. We calculated the goodness of fit (GoF) by multiplying the average communality of the constructs (0.63) by the average of squares of the constructs (0.24), and then took the square root of this calculation. This yielded a GoF of 0.40, which is acceptable. Moreover, values for blockwise average communalities greater than 0.6 are reasonable (ours is 0.63) [57]. Both fitness use innovativeness and self-efficacy have a significant positive influence on usage variety (β = 0.17, $p < 0.001$ and β = 0.24, $p < 0.001$), and only self-efficacy has a significant positive influence on usage frequency (β = 0.33, $p < 0.001$). These findings support Hypotheses 1 and 3. Both usage variety and frequency have a significant positive influence on satisfaction (β = 0.2, $p < 0.001$ and β = 0.22, $p < 0.001$), supporting Hypotheses 4 and 5. In addition, satisfaction has a significant positive influence on revisit intension (β = 0.69, $p < 0.001$), supporting Hypothesis 6. Contrary to our predictions, fitness use innovativeness has an insignificant influence on use frequency (β = 0.05), thereby rejecting Hypothesis 2.

Table 3. Structural model results and effect sizes (f^2).

Criterion	Predictors	R^2	Path Coefficient	f^2	Acceptance
usage variety	UI	0.148	0.17 ***	0.08	S
	SE		0.24 ***	0.08	S
	UI × SE		0.17 ***	0.04	S
Usage frequency	UI	0.162	0.05	0.01	NS
	SE		0.33 ***	0.13	S
	UI × SE		0.19 +	0.04	S
Satisfaction	UV	0.116	0.20 ***	0.05	S
	UF		0.22 ***	0.05	S
Revisit intention	SAT	0.486	0.69 ***	0.48	S

"+" represents $p < 0.1$, *** denotes $p < 0.001$, S = supported, NS = non-supported, goodness of fit = 0.39. UI = use innovativeness, SE = self-efficacy, UV = usage variety, UF = usage frequency, SAT = satisfaction. Effect size ($f^2 = R^2/1 - R^2$) measures the relevance of each predictor of a dependent latent variable and is based on its relationship with the determination coefficients when including or excluding a predictor from the structural equation.

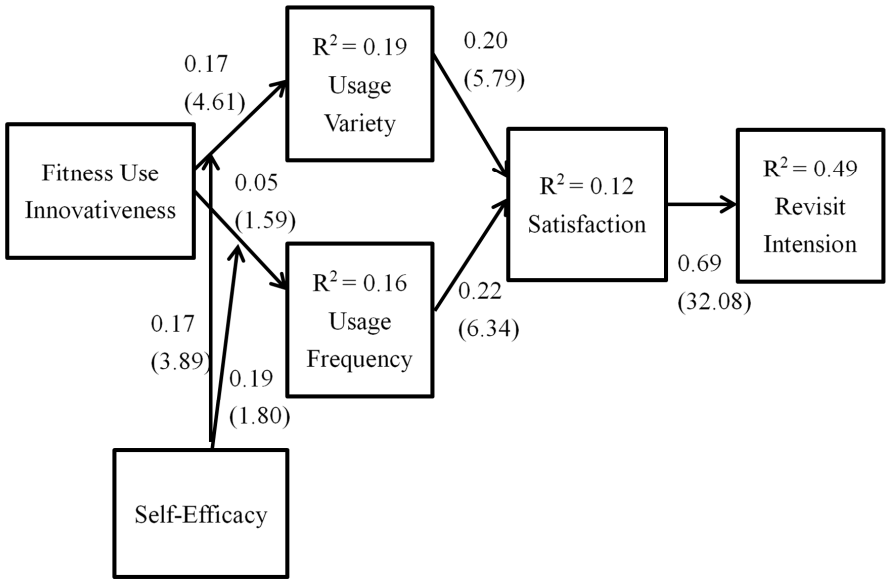


Figure 1. Path coefficients. The numbers in parentheses are *t*-values.

Further, self-efficacy moderates the effect of fitness use innovativeness on usage variety given that the path coefficient ($\beta = 0.17$) between the interaction term and usage variety is significant at $p < 0.001$. This result supports Hypothesis 3-1. However, self-efficacy does not moderate the effect of fitness use innovativeness on usage frequency ($\beta = 0.19$, $p > 0.01$), and thus, Hypothesis 3-2 is supported only when the significance level is $p < 0.1$. In other words, the relationship between fitness use innovativeness and usage frequency is only marginally moderated by self-efficacy. In sum, the research model accounts for 0.148 of the variance in usage variety, 0.162 of the variance in usage frequency, 0.116 of the variance in satisfaction, and 0.486 of the variance in revisit intention.

We examined the effect size of each predictor using the range of effect size defined by Cohen [58]. Effect size is calculated as the increase in R^2 relative to the proportion of variance in the endogenous latent variable that remains unexplained, and accordingly, it is divided into large ($f^2 = 0.35$), medium ($f^2 = 0.15$), and small ($f^2 = 0.02$) effects. As shown in in Table 3, effect size (f^2) ranged from 0.04 to 0.48.

Table 4 shows the total impacts (direct plus indirect effects) between constructs (origins of the effects in rows and destinations in columns). The discussion in the remainder of this section focuses on one focal construct, revisit intention. The highest total effect on revisit intention is that originating from satisfaction (0.70). Usage frequency (0.15) has the second highest effect on revisit intention. Usage variety and self-efficacy continued to show important but lower total effects on revisit intention (0.14–0.09). Fitness use

innovativeness, by contrast, had the lowest total effect on revisit intention (0.03). The total effects of fitness use innovativeness × self-efficacy (Hypothesis 3-1) and fitness use innovativeness × self-efficacy (Hypothesis 3-2) on revisit intention were the same as those by fitness use innovativeness (0.03).

Table 4. Total effects.

Variables	Usage Variety	Usage Frequency	Satisfaction	Revisit Intention
UI	0.17	0.06	0.05	0.03
SF	0.25	0.34	0.13	0.09
UI × SE 3-1	0.18	-	0.04	0.03
UI × SE 3-2	-	0.19	0.04	0.03
UV	-	-	0.21	0.14
UF	-	-	0.22	0.15
SAT	-	-	-	0.70

UI = use innovativeness, SE = self-efficacy, UV = usage variety, UF = usage frequency, SAT = satisfaction.

5. Discussion and Conclusions

This study examined the relationship among fitness use innovativeness, usage pattern, satisfaction, and revisit intention; and the moderating effect of self-efficacy on the relationship between fitness use innovativeness and usage pattern. The results of the analyses are as follows.

This study revealed that, in a highly facility-driven service setting such as the fitness center, fitness use innovativeness has a positive relationship with usage variety, but there is no relationship with usage frequency. The results of the first two hypothesis tests (Hypotheses 1 and 2) are consistent with Shih and Venkatesh's [12] findings. The support of Hypothesis 1 is also consistent with Goldsmith and Hofacker's [15] and Ram and Jung's [13] studies. Hypothesis 3 showed that a moderation effect of self-efficacy on the relationship between fitness use innovativeness and usage variety and usage frequency existed. Hypothesis 3-1 is consistent with Bandura and Jourden's [35] and Wood and Bandura's [27] findings. Hypothesis 3-2 is also consistent with Brown et al.'s [36] finding. The findings of Hypotheses 4 and 5 are consistent with Shih and Venkatesh's [12] propositions. Hypotheses 4 and 5 also confirmed Ram and Jung's [39] study, in that usage patterns (usage variety and usage frequency) and satisfaction were positively and significantly correlated. Finally, the empirical results of Hypothesis 6 were supported by a positive relationship between satisfaction and revisit intention.

In conclusion, fitness customers are likely to demonstrate prominent patronage when usage frequency provides customer with more accurate and realistic performance expectations, which in turn, decreases possible dissatisfaction. In a similar vein, Ram and Jung [38] also evidenced the effects of usage on satisfaction in the context of consumer durable products. In sum, greater satisfaction leads to stronger revisit intentions.

5.1. Theoretical Implications

Most research on use innovativeness have focused on the usage of products such as computers, VCRs, and microwave ovens [12,13,21], whereas few have investigated this relationship in the context of facility-driven services such as fitness centers. The primary contribution of this study is its verification of the relationships among fitness use innovativeness and usage variety and frequency in the facility-driven service industry.

Second, a significant theoretical contribution was achieved by the confirmation of Hypothesis 3. As Shih and Venkatesh's [12] use-diffusion model found, there was no relationship between fitness use innovativeness and usage frequency. However, the research shows that self-efficacy plays a moderating role in shaping fitness goers' service equipment usage patterns. While Brown et al. [36] found that self-efficacy moderates the relationship between information-seeking behaviors such as inquiry, monitoring, and role clarity, this study confirmed its moderating role between fitness use innovativeness and product usage

patterns. In other words, higher levels of use innovativeness among fitness consumers have a positive relationship with usage variety, but there is no relationship with usage frequency. Self-efficacy strengthens the relationship between fitness use innovativeness and usage patterns. Further, fitness customers with higher self-efficacy levels tend to use different service equipment and practice at higher frequencies than those with lower levels. The increases in both the variety and frequency of usage patterns, consequently contributing to user satisfaction and revisit intentions, draws our attention to the practical implications in the contexts of facility-driven services.

5.2. Managerial Implications

The concepts employed in this study can be segmented in consumer markets. Examples include usage patterns in the home technology product market [12,14], consumer innovativeness in the fitness market [34], and self-efficacy in Internet services [22]. Taking these examples for granted, we constructed the following 2 × 2 matrix to discuss the managerial implications of the framework. The numbers of representatives in each cell are as follows: 72 people are prime movers, 52 are experimenters, 29 are imitators, and 81 are laggards (Table 5).

Table 5. Matrix of self-efficacy and fitness use innovativeness.

Self-Efficacy / **Fitness Use Innovativeness** / **Customer Segment**	**High Self-Efficacy**	**Low Self-Efficacy**
High fitness use innovativeness	A (Prime mover)	B (Experimenter)
Low fitness use innovativeness	C (Imitator)	D (Laggard)

5.3. High Self-Efficacy with High Fitness Use Innovativeness (Prime Movers)

Cell A comprises prime movers—high in both fitness use innovativeness and self-efficacy. They are pioneers characterized by confidence, curiosity, and creativity in using new service equipment. In addition, they are frequent users with considerable experience in equipment use. Research [3,59] suggests that physical equipment should be periodically refreshed to improve the marketing performance of leisure services. Regularly updated equipment will serve as stimulus for prime movers. Further, managers can invite them as peer coaches for laggards to help them confidently use equipment.

5.4. Low Self-Efficacy with High Fitness Use Innovativeness (Experimenter)

Cell B consists of experimenters or low self-efficacy users who are interested in developing their muscles using fitness equipment. We suggest that fitness centers provide user-friendly, step-by-step guides for each machine that can help experimenters use the equipment and reduce their anxiety.

Further, experimenters should practice using fitness equipment with their friends. Verbal persuasion among peers can increase experimenters' self-efficacy. This encouragement gives experimenters the confidence to habitually use the equipment. Fitness centers may also offer promotional programs such as buddy or group discounts, which will not only strengthen existing customers' self-efficacy but also invite new ones from different social circles.

5.5. High Self-Efficacy with Low Fitness Use Innovativeness (Imitator)

Cell C denotes imitators who are confident in using fitness equipment, although their functional usage is limited. That is, they use equipment in a fixed manner and are unwilling or unable to use other equipment.

Imitators would be more willing to use the equipment if they were shown how to operate new machines and informed of the functional effect of each apparatus. To facilitate

this, fitness centers should adopt a layout that is divided into various functional areas, each of which has machines with the same functions. Managers could also recommend coaches who can help imitators use new equipment and eventually convert them into loyal customers.

5.6. Low Self-Efficacy with Low Fitness Use Innovativeness (Laggards)

Cell D represents laggards who lack the confidence, curiosity, and creativity in using fitness equipment and who need more help than others, given their lack of willingness to use unfamiliar equipment. In this case, fitness centers should help laggards try different fitness machines through training assistance provided by guides or coaches and the persuasion of peers. A fitness center can also offer short-term coaching coupons and incentives for laggards to use different fitness equipment for a specific period. In addition, fitness centers may invite prime movers to help and encourage laggards to use fitness equipment for various forms of muscle training.

5.7. Limitations and Suggestions for Further Research

Future research is necessary to address the limitations of this research. First, this study focused on the moderating effects of fitness use innovativeness and self-efficacy on usage pattern in the context of fitness equipment. Studies have reported that goal setting is highly correlated with self-efficacy [60], and particularly, one's ability to learn something new. Fitness customers who are goal-orientated may view a challenge as an opportunity to enhance their competence. They are expected to enjoy the challenge of learning and developing self-confidence through their use of new fitness equipment. Future research should therefore investigate the interaction effects of goal setting and self-efficacy on the relationship between fitness use innovativeness and usage pattern for such fitness customers.

Second, researchers could extend the present framework to examine other facility-driven sport services, such as golf courses, swimming pools, sports museums, and sports retail shops. A cross-sectional study could provide more information about sport customers' fitness use innovativeness and usage patterns that could benefit marketing synergy.

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