

Managing Customer's Usage Behavior in a Multi-vendor Loyalty Program*

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Received: April 14, 2015. Revised: May 03, 2015. Accepted: May 14, 2015.

Abstract

Purpose – Loyalty programs enable retailers to maintain longer and better customer relationships. In successful services, customers actively use and value these programs. As the proximity to the goal (goal gradient) might signal active participation, this study empirically examines customer's goal gradient behavior in a multi-vendor loyalty program. We also consider the effect of customer's accrual diversity on goal gradients, which is a differentiating feature in a multi-vendor loyalty program, and is further examined.

Research Design, Data, and Methodology – The data consists of 6,646 OK Cashbag members' individual transaction records from 2006 to 2009. The goal gradient hypothesis was tested as an increase in both the speed and the amount of accumulated award points.

Result – The findings suggest that the goal gradient is also observed in a multi-vendor loyalty program, occurring more strongly among members with high accrual diversity.

Conclusions – The results indicate that customers with high accrual diversity attend strongly to goal gradients in multi-vendor loyalty programs; hence, it is important for such program managers to better inform members about affiliated partners.

Keywords: Multi-Vendor Loyalty Program, Goal Gradient Behavior, Accrual Diversity, Korean Market, Marketing Strategy.

JEL Classifications: M10, M31, M30.

1. Introduction

As relationship value has a positive impact on perceived quality of service, store brand images, economic value, store

convenience (Kim, 2012), and social value (Yang et al., 2013), how to build a good relationship with their customers is an important decision for retailers. Loyalty programs are one of the marketing tools for firms to create relationship value with their customers.

A loyalty program is defined as a long-term-oriented program that allows consumers to accumulate forms of program currency, which can be redeemed later for rewards (Liu & Yang, 2009). In a typical loyalty program, a customer accrues points by purchasing a firm's products. In the past, most loyalty programs were offered by a single vendor (i.e. referred to as a single vendor loyalty program). This type of loyalty program meant that customers could only gain benefits from a single service provider, and could only receive rewards from the company which had issued the loyalty program.

Recently, a new trend in loyalty programs referred to as multi-vendor loyalty programs have emerged in the market. This type of the loyalty program differs from the single vendor loyalty program in terms of partnership structure. In the multi-vendor loyalty program, firms share the loyalty program with their affiliated partners. Hence, members of the program are able to accumulate points and redeem rewards from multiple affiliates.

This service has been successfully introduced all around the world. For example, there has been Nectar in U.K., Airmiles in Canada, Payback in Germany (Dorotic et al., 2010), and OK Cashbag in Korea. In the case of OK Cashbag, the first multi-vendor loyalty program in Korean market, it has become the largest and most successful loyalty program in Korea. Currently, over 37 million consumers have registered for the program which boasts over 50,000 affiliated partners, including Korea's leading companies.

Despite the growing popularity multi-vendor loyalty programs, there is little academic research exploring their efficiency. The purpose of this paper is to fill this gap by examining customers' usage behavior in the multi-vendor loyalty program. Specifically, this paper investigates customers' usage behavior in the multi-vendor loyalty program by incorporating the goal-gradient hypothesis.

Goal gradient research suggests that customers accelerate and persist in their efforts as they near the program's incentive threshold (Kivetz, 2000). Previous research on the goal gradient in the loyalty program explains that customers with a stronger tendency of the goal gradient show greater retention and faster

* This article was developed partly on the base of the dissertation submitted by Kay Ryung Koo (2015).

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reengagement in the program (Kivetz et al., 2006). Therefore, the goal gradient is associated with customer's future usage behavior of the loyalty program. Although the goal gradient in the loyalty program has attracted much attention in the academic sphere, empirical research has only found the presence of the goal gradient in single vendor loyalty programs (Kivetz et al., 2006; Drèze & Nunes, 2011; Cheema & Bagchi, 2011). Thus, the question of whether goal gradient behavior can be found in the members of multi-vendor loyalty program still remains.

The main goal of our research is to empirically demonstrate the existence of the goal gradient in the multi-vendor loyalty program. We further conclude that members who use loyalty program cards with diverse vendors are more likely show the goal gradient compared to members who do not. Since the multi-vendor loyalty program allows customers to accrue the points from multiple vendors, it is important to consider customer's accrual diversity within the program. We believe that customers with high accrual diversity would show stronger goal gradient behavior since the ease and convenience of accumulating points would increase their motivation in pursuing their goal.

The paper is organized as follows: before proposing our hypotheses, we begin with an introduction of the multi-vendor loyalty program. The purpose of this section is to explain what the multi-vendor loyalty program is and how the structure of the multi-vendor loyalty program differs from that of the single-vendor loyalty program. Then, we summarize recent published literature on the multi-vendor loyalty program and the goal gradient to propose our main hypotheses. Next, we empirically test whether members of multi-vendor loyalty programs show the goal gradient by analyzing real-world data. The breakdown of this study is as follows: 1) defining a multi-vendor loyalty program, 2) theoretical background and hypothesis development, 3) empirical analysis (data, measures, and results), and 4) general discussion (empirical findings, managerial implications, limitations and future research). To the best of our knowledge, this is the first paper studying goal gradient behavior in the multi-vendor loyalty program.

2. What is a multi-vendor loyalty program?

A multi-vendor loyalty program refers to a loyalty program affiliated with multiple firms, where customers can earn and/or redeem their points for rewards from any of the participating firms (Breugelmans et al., 2014). Multi-vendor loyalty programs are advantageous for both affiliated partners and customers. Since there are multiple outlets from which participants can accrue points or redeem rewards, the loyalty program not only makes point accumulation faster and more convenient for cardholders, but also provides them with a better choice of rewards (Dorotic et al., 2010). As for companies, firms affiliated with loyalty can benefit from various alliance programs and channels. By being a partner with the multi-vendor loyalty program, a firm could greatly increase its profitability by expanding its market (Kopalle & Nesline, 2003; Liu & Yang, 2009; Dorotic et al., 2010; Jung et al., 2011) while saving its cost for running its own loyalty program (Jung et al., 2011). Additionally, multi-vendor loyalty pro-

grams may help create a positive spillover effect on the image of participating vendors (Varadarajan, 1986; Lemon & Wangenheim, 2009; Jung et al., 2011).

2.1. Partnership structure

Loyalty program can be classified based on the partnership structure (Dorotic et al., 2010). In a single vendor loyalty program, the members of the loyalty program can only accumulate and redeem points from the single vendor. For instance, Walgreen, one of the largest drug retailing chains in the United States, issues loyalty program so-called Balance Rewards card. Through this card, customers can accrue points by purchasing the products from the store chains, and redeem 5000 points for a \$5 reward.

On the other side, there is the multi-vendor loyalty program. In academic researches, multi-vendor loyalty program is also called as a coalition program or partnership loyalty program. A unique feature of the multi-vendor loyalty program is that customers can accrue by making purchases from multiple affiliated loyalty program partners. There are two major types of the multi-vendor loyalty programs, which differ by which company runs the program (Breugelmans et al., 2014). The first type of program is operated by a dominant firm, where affiliated partners offer services which are complementary to those of the dominant firm (Leman & Wangenheim, 2009; Breugelmans et al., 2014). A most common example of this would be an airline's frequent flyer program. For example, if a consumer registers membership of the Skypass club, a frequent flyer program offered by Korean Air, they earn mileage per use of services provided by Korean Air as well as Korean Air affiliates such as hotels, rental car services, credit card companies, and so on. In this case, Korean Air is the dominant firm running the program, and the partners such as hotels and the rental company are the affiliated partners.

The second type of multi-vendor loyalty program involves equal-level partnership within the loyalty program, and is operated by an independent firm specializing in management of the loyalty program (Breugelmans et al., 2014). AirMiles, Payback, Nectar, FlyBuys and OK Cashbag are well-known examples of the second type. The equal-level partnership loyalty program can also be divided into two subcategories depending on partnership portfolio. Dorotic et al. (2010) originally proposed that the multi-vendor loyalty program is composed of partnerships between noncompeting firms. They suggest that this type of program is usually formed between frequent purchase sectors such as grocery, fuel, apparel, and credit card services. Nectar would be a typical example of this type of multi-vendor loyalty program (i.e. Nectar provides service in many noncompeting categories). However, a different type of program can be found in the market. In some programs with partners at equal level, coalitions are formed not only with noncompeting partners but also with competitors. OK Cashbag and AirMiles are examples of this. OK Cashbag, for instance, has partnerships with three major cinemas, all owned by different Korean companies: CGV (CJ), Megabox (SPC), and Lotte Cinema (Lotte). In AirMiles, Apple,

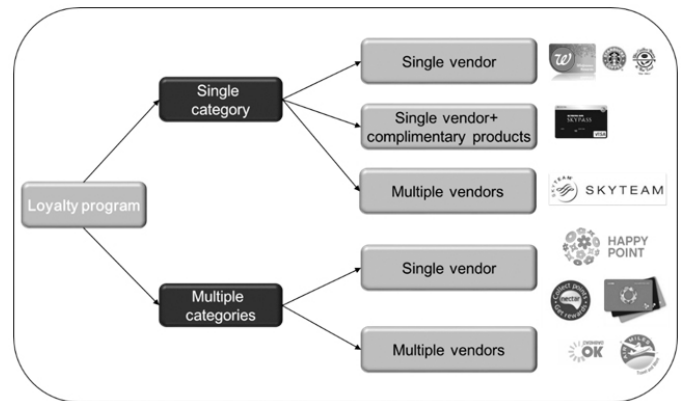
Dell and Lenovo are competitors who are affiliated partners within the program. Thus, members of Airmiles are able to accumulate points not only by purchasing from Apple, but also from Dell or Lenovo.

2.2. Category structure

We can also group loyalty program based on the number of categories involved in the program (single category vs. multiple categories). According to this classification, some preceding examples can be reclassified as single vendor programs operating in a single category.

For example, Skypass can be re-categorized as a loyalty program operated by a dominant firm in a single category since while there are affiliated partners within the program, they do not hold as much power as the dominant firm. Other loyalty programs such as SkyTeam, one of the largest coalition programs in the airline industry, can be further reclassified according to these criteria. SkyTeam is an airline alliance with 20 airline companies all around the world including Delta (U.S.A), KLM (Netherlands), Korea Air (R.O.K) and so on. An interesting feature of the SkyTeam program is that when a customer possesses a loyalty program card from any of the coalition partners, frequent-flier mileages can be transferred across affiliated partners. In other words, there is no specific operator or dominant firm running the program. Therefore, SkyTeam can be classified as a program operated in a single category with multiple affiliated partners. Furthermore, programs such as Nectar (i.e. the multi-vendor loyalty program comprised of partnerships of non-competing firms) can be considered as programs operating in multiple categories, but with a single vendor for each category. Lastly, loyalty programs such as OK Cashbag or Airmiles (i.e. multi-vendor loyalty programs comprised of partnerships between noncompeting and competing firms) are programs operated in the multiple categories, and affiliated with multiple vendors.

Since the prior classification did not cover all types of loyalty programs, the categorization based on the category structure has been utilized in this paper. <Figure 1> and <Figure 2> explains the categorization process of loyalty programs based on partnership and category structure.



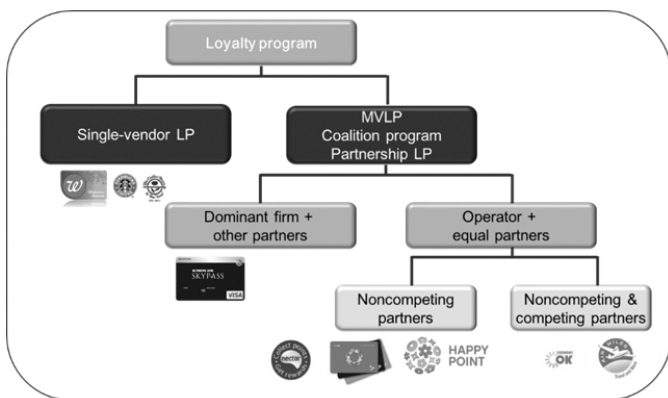
<Figure 2> Classification of the loyalty program (Category structure)

2.3. Effectiveness of a multi-vendor loyalty program

Although academic research suggests that the multi-vendor loyalty programs have positive advantages for both firms and customers, empirical studies exploring the effectiveness of the multi-vendor loyalty program have been relatively rare compared to research into the single vendor loyalty program.

The first published paper studying the multi-vendor loyalty program developed a dynamic model of cross-buying across loyalty program partnerships which was then tested with data from a European airline (Leman & Wangenheim, 2009). The program type used in this study is the program consisting of a dominant firm and other partners. The research found that customers' satisfaction with the dominant firm's core service has a positive effect on their cross buying of affiliated partners' products or services. It was further suggested that this cross-buying effect would influence the customer's relationship with the core service since the cross-buying would positively influence future purchases of the core service. Dorotic et al. (2010) also examined cross-buying effect in the multi-vendor loyalty program. This research used data from five prominent retailers participating in multi-vendor loyalty programs and found no significant effects on cross-buying across the affiliated partners.

Another stream of the research on a multi-vendor loyalty program focuses on the effect of program loyalty on customers' purchase behavior. Existing literature suggests that the loyalty program may increase customer's loyalty toward the program rather than loyalty toward the company (Dowling & Uncles, 1997; Yi & Jeon, 2003; Meyer-Waarden, 2007). Evanschitzky et al. (2012) empirically tested the effect of program loyalty on consumer's behavior by analyzing the program of a large European retailer. They found that while customers' future purchases were positively influenced by program loyalty and company loyalty, program loyalty had a stronger effect on future purchase compared to company loyalty. Schumann et al. (2014) further extended Evanschitzky et al. (2012)'s research by incorporating the negative spillover effect across coalition partners. They found that when a customer had a negative experience with one of the coalition partners, the negative spillover effect



<Figure 1> Classification of the loyalty program (Partnership structure)

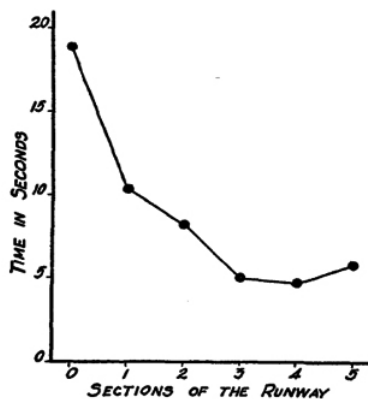
affected program loyalty.

Aside from researches on cross-buying and program loyalty effect, Lee et al. (2012) directly examined the difference between the effects of a multi-vendor and a single-vendor loyalty program by conducting experiments. They found the multi-vendor loyalty program is more effective to attract new customers than single-vendor loyalty program. However, a single-vendor loyalty program can be more effective when minor brand tries to retain existing customers.

Previous researches such as those listed above mainly argue about firm-side advantages of joining the multi-vendor loyalty program. Therefore, questions remain when it comes to customers' usage behaviors in the multi-vendor loyalty program. Thus, research into the customer's usage behavior in the multi-vendor loyalty program is necessary.

3. Theoretical background and hypothesis development

<Figure 3> displays a typical set of results from Hull (1934)'s experiment which reveals the goal gradient. As <Figure 3> illustrates, subjects increase their speed when they are getting close to the goal.



<Figure 3> The goal gradient (Hull, 1934)

The goal gradient can therefore be defined as a subject's tendency to accelerate goal-acquiring behavior as proximity to the goal decreases (Hull, 1932). There are several papers explaining the goal gradient effect in the loyalty program (Kivetz, 2000; Nunes & Drèze, 2004; Nunes & Drèze, 2006; Kivetz et al., 2006; Drèze & Nunes, 2011; Cheema & Bagchi, 2011). In this paper, we will introduce recent research which empirically investigates member's goal gradient behavior in the loyalty program.

Kivetz et al. (2006)'s study was the first paper to empirically test the goal gradient by conducting field experiments as well as analyzing the secondary customer data. They found that the effort investment is a function proportional to the original distance remaining to the goal, and that illusion of progress towards the goal induces purchase acceleration. Furthermore, they

found that a strong customer tendency of goal gradient behavior leads to greater retention and faster reengagement in the program. Drèze & Nunes (2011) extended Kivetz et al. (2006)'s research to the recurring goal situation. The authors explained how the success of reaching a goal contributed to an increase in efforts of members to reach a subsequent goal. They found that success in reaching a goal had a positive impact on repeated reward redemption behavior. They then concluded that the perception of self-efficacy drives the goal gradient by boosting the member's usage behavior of the loyalty program. Cheema & Bagchi (2011) extended the goal gradient researches by finding an influential factor of the goal gradient. They demonstrated that the closer people get to a goal, the more external representations they form, which increases ease of visualizing the goal and enhances goal pursuit. They concluded that consumers judge easy-to-visualize goals to be closer than difficult-to-visualize goals, which in turn influences their efforts and commitments.

Although there are a few studies investigating goal gradient behavior in the loyalty program, member's goal gradient behavior in the multi-vendor loyalty program still has not been subject to study. All previous goal gradient literature, as indicated above, used the single vendor loyalty program as a unit of analysis. Though Drèze & Nunes (2011) examined the goal gradient in the airline industry (i.e. the analyzed program is one of the multi-vendor loyalty program), they restricted other coalition effects on the goal gradient. Thus, previous research has only demonstrated the existence of goal gradient behavior within single vendor loyalty program.

We believe that the goal gradient also can be observed in multi-vendor loyalty programs. Conceptually, there are two conditions which cause goal gradient behavior (Steers & Porter, 1974). The first condition explains the goal gradient is a function of goal value. Goal gradient occurs when people pay more attention to the goal as they get closer to the goal of attaining the reward (Humphrey et al., 2004; Kivetz et al., 2007). This attention is more likely to be triggered when the goal is meaningful to the members so that perception of the value of the goal should increase when the members near the goal. The second condition is goal attainability. A review of the literature reveals that when people perceive the reward as unattainable, they are not likely to put effort into pursuit a goal (Proffitt 2006; Drèze, & Nunes, 2011).

In the case of multi-vendor loyalty programs, customers have a variety of places available from which to accrue and redeem points. In fact, in the multi-vendor loyalty program, the customer decides how much to accumulate, what to redeem, how much to redeem, when to redeem and where to redeem for a reward. Therefore, the customers' perceptions of goal value would be high since customers can redeem rewards based on their decision. Moreover, the expectation of the goal attainability would be high in the multi-vendor loyalty program as the accumulated points are transferable across affiliated partners. Based on this expectation, the first hypothesis was developed as follows.

<H 1> Members in a multi-vendor loyalty program will show a positive goal gradient.

However, we can expect its effect can be different across customers. Previous goal-related researches indicate that individual traits such as self-efficacy or vision has positive relations with the goal attainability (Choi et al., 2014; Park & Choi, 2014). As self-efficacy is defined as a personal opinion of one's ability to accomplish concrete task, it not only influence people to commit with their goal (Yang & Tasnuva, 2013) but also has a positive association with the goal gradient (Drèze & Nunes, 2011).

Individual beliefs towards the goal might influence the goal gradient, however, this paper focus on the customer's usage behavior (i.e. accrual diversity) as an individual characteristic influencing the goal gradient. The reason we examine accrual diversity is that it is a key distinctive feature which explain customers' experiences in the multi-vendor loyalty program.

Accrual diversity in this research is defined as how many retailers that they use to accumulate the points .It was assumed that members who accrued the points from multiple vendors were more likely to engage in goal gradient behavior than members who do not.

This expectation was formed based on two reasons. Firstly, members who accrue points from multiple vendors would be better informed on the program than others. Members without any knowledge on the affiliate companies involved in the program would have more difficulty using their loyalty cards at various places. Thus, the more customers know about the program, the more likely it is that they frequently use the loyalty program. Previous studies on product assortment suggest that product variety has a positive impact on perceived value of the products (Cho et al., 2012). We believe that customers who purchase the products from various places, they might perceive the program as more valuable than others. Secondly, customers accruing points by purchasing from many different categories would take less longer to redeem them for reward as it is much easier to accumulate points from various places than from the single place. According to mental accounting literature, people assign expenditures into specific categories, all of which have different budget constraints (Thaler, 1980). Consumers tend to assign more money to the category when they perceive the category is important to them. Thus, budget constraints for the categories are different across individuals. Due to the nature of the multi-vendor loyalty program, customers can accumulate points without reaching budget constraints for a specific category since they can compensate by purchasing products from other categories. This means that goal attainability should increase when the program systematically allows cross-buying to accrue points.

Therefore, this paper expects that there would be positive association between member's accrual diversity and the goal gradient in a multi-vendor loyalty program. The likelihood of goal attainability would be higher for customers who show higher accrual diversity. Consequently, this would lead to customer's goal gradient behavior. Based on this prediction, the second hypothesis is developed as follows.

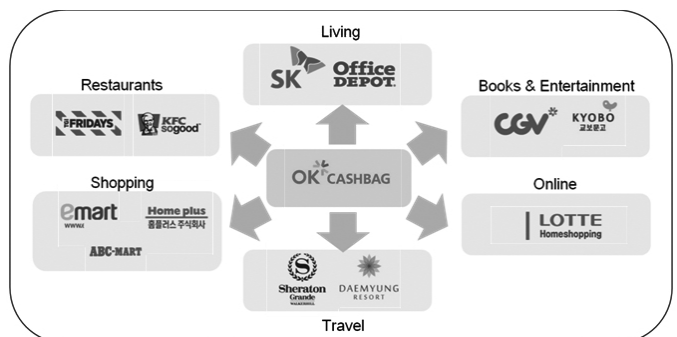
<H 2> Members who accumulate points from multiple vendors (vs. customers who do not) will show more positive goal gradient in a multi-vendor loyalty program.

4. Empirical analysis

4.1. Data

The data was obtained from OK Cashbag, a pioneer of a multi-vendor loyalty program in South Korea operated by SK Marketing & Company, currently SK Planet. OK Cashbag delivers benefits by offering members points that can be redeemed for rewards in the future. Members earn the points from various vendors according to a rate agreed upon between OK Cashbag and their partners (Jung et al., 2011). There is no joining fee for the OK Cashbag service. After accumulating points, members can either redeem for rewards or receive discounts from partners affiliated with OK Cashbag. Cash back is also available. Customers are rewarded with free gifts by participating in promotions. In the offline store, customers need at least 5000 points in order to receive free products or services, but there is no point threshold in online store.

This program was selected for primary data for two reasons. Firstly, this program itself has had a huge impact on Korean market (Approximately, 37 million Korean consumers registered for this program). Second, this data is particularly appropriate for studying multi-vendor loyalty programs since over 50,000 companies are participating in this program. OK Cashbag has partners in diverse industries such as gasoline, convenience store, banking, credit cards, distribution, restaurants, cinemas, online shopping, etc. Since so many partners are connected to OK Cashbag, it allows us to study whether the propensity of members' accrual diversity influences goal gradient behavior. <Figure 4> demonstrates the examples of partnership structures in OK Cashbag program.



Source: OK Cashbag (2015)

<Figure 4> The examples of coalition companies in OK Cashbag

4.2. Measure: The goal gradient

Since there has been no study which has examined the goal gradient in the context of the multi-vendor loyalty program, we needed to develop a way of testing the goal gradient.

By definition, goal gradient behavior in the loyalty program refers to the customers' acceleration and persistence in their efforts as they approach the program's incentive threshold (Kivetz, 2000). For most research into the goal gradient, measurement of the goal gradient was based on the temporal difference originally proposed by Hull (1934). With this measurement, the increase in the speed of accumulating the points toward the goal was considered as a signal for the goal gradient. However, Kivetz et al. (2006) extended the method of measurement by adding the shortened inter-purchase time and increased purchase quantity aspects. They argued that when measuring the goal gradient, including increased purchase quantities is especially important when customers increase their spending levels in a single visit (e.g. "earn one point for each dollar spent"). In this case, both shortened inter-purchase times and increased purchase amounts can be the signals of the goal gradient (Kivetz et al., 2006). Following Kivetz et al. (2006)'s suggestion, we measured the goal gradient as increase in both (1) the speed of accumulating points toward the goal and (2) the amount of accrual points toward the goal.

The first way of measuring the goal gradient has been developed as the increased speed of accumulating points toward the goal. The procedure of developing a measure for the goal gradient is as follows. Firstly, member's total accrual points before the redemption is classified into four sections to establish the threshold for each member. Building up the threshold is important when measuring the goal gradient in the multi-vendor loyalty program. Since customers in the multi-vendor loyalty program accrue different amounts of points to achieve rewards, there is a variation in accrual points across members. While some might accrue large amount of points and redeem for large rewards, others may only accumulate in small sizes for small rewards. Therefore, for the analysis, a threshold must be set in order to compare the first and last phase of effort level. Secondly, we estimated how many days it had taken the members to accumulate the points for each section. Lastly, we compared the total days taken in the first section with the fourth section.

For example let's assume that Mr. A joins the program and accrues a total 1,000 points within 40 days. His total accrual points before the redemption are classified into four sections to establish the threshold: In this case, Mr. A's threshold for each section would be 250 points. Then, his inter-accrual days for each section are estimated. Let's assume that Mr. A took 20 days to reach 250 points at the first section and 5 days to reach 250 points at the fourth section. This would mean that his speed in accumulating the points increased as he was close to the goal, so we could conclude that he showed positive goal gradient behavior.

The second way of measuring the goal gradient is to use the increase in amounts of point accumulated as goal approaches. In order to compare the amounts of points that members accu-

multate during the process, members' total accrual points before the redemption are classified into four sections to establish the threshold for each member. Then, accrual amount for each section is estimated in order to compare the first and the last section. Going back to the previous example, Mr. A's threshold for each section would be 10 days for the second measurement since his total accrual period is 40 days. If he accumulated 50 points during the first section while accruing a total 600 points at the fourth section, we could see that his accrual amounts had increased as he got closer to the goal. Again, we could conclude that he showed positive goal gradient behavior.

4.3. Study

The main objective of this study is to show whether the goal gradient effect occurs in the multi-vendor loyalty program. It is expected that members accelerate purchases in the multi-vendor loyalty program as they are close to the goal.

Our data consists of OK Cashbag members' transaction records from 2006 to 2009. The samples used in this study are the members who have redeemed for rewards at least once, and used the loyalty program card at least twice during the transaction periods. As the members' goal in the loyalty program is to get a reward (Kivetz et al., 2006), the samples should have redeemed for a reward at least once in order to test the goal gradient effect. The second condition (i.e. members who use the card at least twice during the transaction periods) was employed to ensure that there is meaningful data for every customer (Liu, 2007).

For this study, it was assumed that the first accrual record in the data set was the first transaction during the reward redemption process. This assumption allows estimation of the members' total accrual points and total accrual days for the reward redemption. Thus, 6646 samples of OK Cashbag members were analyzed in this study. There was no restriction on whether members redeemed for the first time or not. In order to allow examination of the goal gradient in more general situations.

The variables used in this study were member's accrual days and amounts during the first section and the fourth section. If members increased their efforts as they are close to the goal, their accrual days during the fourth section would be shortened compared to the first section. Thus, this was considered as the positive goal gradient. Also, if members increase their efforts as they are close to the goal, their accrual amounts during the fourth section would increase compared to the first section. Thus, this was also considered as the positive goal gradient.

Descriptive statistics for each variable are provided in <Table 1>. On average, members accumulated the total 14,019.7 points during the transaction periods (the average of accrual frequency: 57.8) and took 436.5 days from the first accrual days until they redeemed the reward.

Descriptive statistics indicates that member's accrual days or amounts are very much different across members. We decided to further control variations in the accrual days and the accrual amounts across customers by transforming the variables into logarithmic form. To calculate the log function for zero, 1 is added.

<Table 1> Descriptive statistics

Variable	Average	Median	Min	Max	S.D.
Day (Section 1)	140.5	103.0	0.0	985.0	134.7
Day (Section 4)	99.9	74.0	0.0	925.0	98.5
Point (Section 1)	2,998.3	1,514.5	1.0	308,628.0	6,151.1
Point (Section 4)	4,936.7	2,083.5	0.0	5,955,120.0	73,364.7
Total accrual frequency	57.8	36.0	3.0	3,806.0	79.2
Total accrual amount	14,019.7	7,192.0	103.0	8,297,013.0	103,373.0
Total accrual period (day)	436.5	401.0	0.0	1,087.0	268.9

<Table 2> T-test results for accrual diversity

Variable	Group	N	Mean (log(Q4+1)-log(Q1+1))	Mean Diff (1)-(2)	t-value	p-value
Accrual days	Group 1 (Diversity low)	3341	-0.25			
	Group 2 (Diversity high)	3305	-0.37	0.12	3.15	0.00
Accrual amounts	Group 1 (Diversity low)	3341	0.27			
	Group 2 (Diversity high)	3305	0.34	-0.07	-2.12	0.03

Paired t-test was conducted for the statistical analysis. The result of paired t-test statistically supported the goal gradient effect in a multi-vendor loyalty program. Overall, the mean difference between the fourth and the first section was significant. Specifically, the mean difference of accrual days between the fourth section and the first is -0.31 (t-value: -16.19). Also, the mean difference of accrual amounts between the fourth section and the first is 0.31 (t-value: 18.61). As we expected, members tend to increase their speed or amounts of accumulating the points when they near to the goal.

The observed and estimated purchase acceleration is consistent with Hypothesis 1 (i.e. confirming the existence of a goal gradient in a multi-vendor loyalty program). However, an alternative explanation for this finding must be discussed. Member's speed and quantity acceleration might be observed when members learn more about the program over time (Kivetz et al., 2006). For example, it is possible that members learned to accumulate the points faster by learning of new places for accrual, thus accrued more points later on. If the observed speed and quantity acceleration happened because of a learning effect, members' effort should have increase monotonically (Kivetz et al., 2006).

To rule out the alternative explanation, we further considered member's accrual pattern from the first section to the last section. From <Figure 5>, we found out that member's speed or amount of accrual points was not dependent on time. In other words, our results indicate that member's effort acceleration does not increase monotonically. The average accrual amounts in particular were found to not increase until the third section, but instead dramatically increased in the fourth section.

This pattern of point accrual behavior indicates that there is a propensity to increase speed or the amounts in accruing points as customers get close to the goal and cannot be explained by an alternative explanation such as member's learning. We conclude that these effort acceleration toward the reward redemption is resulted from the goal gradient. Thus, our Hypothesis 1 is supported.

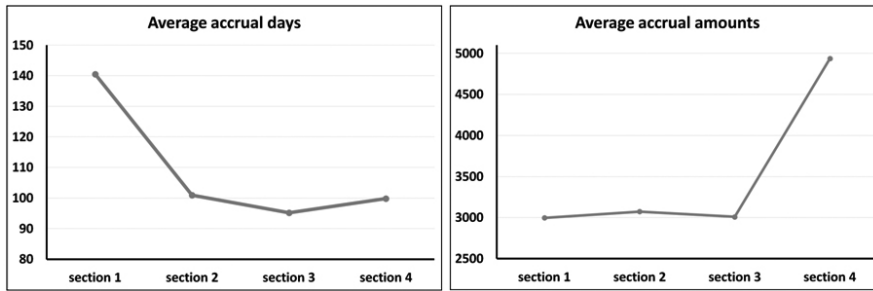
To test Hypothesis 2, we divided our samples into two groups: members who accumulated the points from diverse vendors vs. those who did not. We expected that members who accrued the points from diverse vendors would tend to show more positive goal gradient. In order to compare the accrual diversity across members, we used Shannon's entropy index (Godes & Mayzlin, 2004) to compute customers' accrual diversity.

$$\text{Accrual diversity} = - \sum_{i=1}^c p_i \ln p_i$$

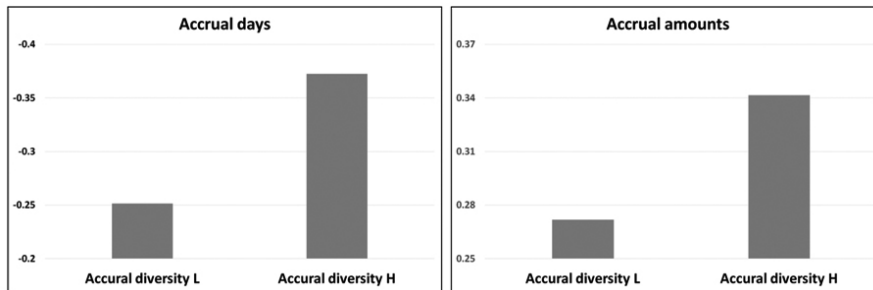
Where, p_i is the proportion of individuals product purchase.

If the Shannon entropy index is close to zero, it means that the customer used their loyalty card in a limited set of categories. In contrast, if the member used the card from diverse places, the index should be close to 1. Based on this measurement, we can split the members into two groups (median score: 0.44). The first group is formed with the members who showed low accrual diversity and the second group is composed of members who showed high accrual diversity.

The results are shown in <Table 2>. We can see that members who show high accrual diversity tend to show more positive goal gradient compared to the members who show low accrual diversity. More exactly, the mean difference in the accrual days between the fourth section and the first section was larger for group 2 compared to group 1 (-0.25 vs. -0.37). These results are also consistently found in the accrual amounts (Group 2: 0.27 vs. Group 1: 0.34). Therefore, we conclude that the goal gradient is more strongly observed when members of multi-vendor loyalty program accumulate points from diverse vendors. Therefore, Hypothesis 2 has been supported.



<Figure 5> Average point accrual patterns



<Figure 6> Accrual diversity

5. General discussion

5.1. Implications

Our research indicates the presence of the goal gradient in a multi-vendor loyalty program. According to the results, there is a propensity to increase speed or amount in accruing points as customers approach the goal. Furthermore, we found that members' effort acceleration toward the goal occurs more strongly for the members who show high accrual diversity (vs. low accrual diversity).

Our research has a few implications. From a theoretical perspective, this is one of the first papers examining the goal gradient in the context of multi-vendor loyalty program. Even though it has been a while since the multi-vendor loyalty program has been successfully introduced to the market, there is limited academic research regarding members' point usage behavior in the multi-vendor loyalty program. We believe this paper expands goal-gradient related research into the multi-vendor loyalty program.

From a managerial perspective, as members tend to increase their efforts when they accumulate points from purchasing diverse products, it is important for managers of a multi-vendor loyalty program to let members know more about affiliated partners. Moreover, it is recommended that a manager should encourage various firms to participate in this service in order to increase the effectiveness of the program.

5.2. Limitations & Future researches

For future research, we recommend looking into the drivers of the goal gradient and its effectiveness on multi-vendor loyalty

program usage behavior. This paper only considers the effect of accrual diversity on the goal gradient, however there may be other influencing factors reinforcing member's goal gradient behavior in the multi-vendor loyalty program. Customer's perception on the reward value such as reward size, or reward type might have a positive impact on customer's goal gradient behavior. Although customers from our analyzed program only receives a financial reward as a consequence of their level of effort, it would be interesting how it would be different when the multi-vendor loyalty program not only offers customers a financial reward but also a service reward or even joint rewards. Kim (2012) pointed out customers perceive the reward value differently based on their individual characteristic such as program involvement. From Kim (2012)'s findings, we might expect when customers are exposed to service rewards, the customers who have higher program involvement will show strong goal gradient behavior than the customers who have low program involvement. And its effect might be observed strongly when the reward is service-oriented.

Besides on the goal related researches, researches on multi-vendor loyalty programs would offer many opportunities for future researches in marketing. We recommend looking into consumer's intrinsic motifs of using the multi-vendor loyalty programs. As functional, economic, social, and creative value has positive association with brand satisfaction and behavioral intentions (Sung et al., 2014), studying those factors on the customer loyalty towards the multi-vendor loyalty program could be one of ways to explain consumer's intrinsic motivations of program usage behavior.

In summary, the findings in this article provide converging evidence for the goal gradient in the multi-vendor loyalty pro-

gram based on empirical data. This paper proposes that the goal gradient has important theoretical and practical ramifications in understanding members' point usage behavior in the multi-vendor loyalty program.

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