Does Loss-Leader Pricing Work in Online Shopping Malls?

Dai-Sung Yeum[*]

Induck Institute of Technology
Wolkyedong, Nowongu, Seoul, Republic of Korea

Myungsin Chae[**]

Seoul University of Venture and Information
Seochodong, Seochogu, Seoul, Republic of Korea

Ji-Young Kim[***]

CJ Entertainment
Yeuksamdong, Kangnamgu, Seoul, Republic of Korea

ABSTRACT

As online shopping malls have emerged as a substantial shopping channel, they have used various sales promotion strategies to acquire new customers. Most of these strategies have been applied by offline malls for years. One, loss-leader pricing, is a type of promotional pricing in which stores sell well known products below their marginal cost, in order to attract customers and induce them to purchase more goods through impulse buying. This strategy is based on the expectation that customers will factor transaction costs into their purchasing decisions. However, its application to online malls fails to recognize that transaction costs are lower online, and that customers will behave differently as a result. Our study predicts that loss-leader pricing will not work online because online malls entail lower searching and moving costs than offline malls. The study examines the effectiveness of loss-leader pricing with empirical data from a survey as well as log data from a Korean online shopping mall. The results show that while loss-leader pricing does attract customers to online shopping malls, it encourages cherry-picking rather than impulse purchases of regular-price goods.

Keywords: e-commerce, Online Shopping Mall, Loss-leader Pricing, Online Strategy, Online Marketing

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[*]   Email: dsyeum@induck.ac.kr
[**] Corresponding Author, Email: mschae@sit.ac.kr
[***] Email: jykim80@cj.net

1. INTRODUCTION

As the Internet emerges as a substantial shopping channel, online shopping malls are trying out various marketing strategies to lure more profitable buyers. However, only 2% of visitors to online shopping malls actually purchase products [5]. It is necessary, therefore, to examine the effectiveness of different marketing strategies for online shopping malls.

Online retailers usually implement the same promotion strategies as offline malls do. They have been unsuccessful in part because they have failed to consider the dramatic differences in business environments and differences in consumer behavior online and offline. If online retailers are to succeed, they must find marketing strategies appropriate to an online shopping environment.

One of the pricing strategies used frequently in online malls is loss-leader pricing. This is a pricing strategy by which retailers sell some products at or below their marginal cost, incurring losses on the sales of those items, but in the process luring consumers into the store, in the hope that they will buy other goods on impulse – goods on which the retailer can make a healthy profit [12]. The strategy is based on transaction cost theory. However, research in online markets indicates that transaction costs are quite different online and offline, leading customers to behave differently in the two environments. Accordingly, this study will investigate empirically the effectiveness of loss-leader pricing in an online environment, asking these research questions:

(1) Does loss-leader pricing have the intended effect of attracting customers to an online mall?
(2) Does loss-leader pricing make customers in an online mall buy products other than the loss-leaders?
(3) Does loss-leader pricing produce the adverse effect of cherry-picking (i.e. buying only the loss-leaders) in an online mall?

2. LITERATURE REVIEW

2.1 Loss-leader pricing and transaction costs

Pricing strategy is one of the highest priorities in retail management. Because consumers decide which store to visit and what products to buy on the basis of

their budget, a store's traffic can be changed through changes to its pricing strategies. In extremely competitive markets, an effective short-term price strategy is all but essential to commercial success. For this reason, many researchers have already investigated the efficacy of various price strategies in different situations [2]. Loss-leader pricing, a strategy supported by transaction cost theory, has been successfully implemented in offline malls. Transaction costs are the costs incurred in making an economic exchange, and can include such costs as search, transportation, travel, and negotiation costs. If consumers are rational, they will buy more than one item at a given location, because the cost of moving to another mall to buy something at a lower price is often greater than the cost of buying it at regular price right where they are.

Impulsive purchasing behavior is also closely related to the effectiveness of loss-leader pricing [4, 9, 13]. Impulsive goods are products bought on sight without price comparisons across stores. A large-scale study by the Point-of-Purchase Advertising Institution shows that roughly 60% of all products bought in supermarkets are unplanned purchases [7]. Loss-leader pricing can be described as a "bundling strategy" in which a store bundles impulsive goods with loss-leader products. The cost of going to another store gives the seller monopoly power over the impulsive goods. In fact, it has been shown that customers who purchase loss-leaders buy more products than those who do not [8].

2.2 Loss-leader pricing and cherry-picking

It has also been suggested that different types of shopping trips will produce different consumer responses to a price promotion. Walters and Jamil [14] posit three types of shopping behavior: (1) major shopping trips, (2) fill-in shopping trips, and (3) shopping trips primarily to purchase specials. The major shopping trip, in which many items are to be purchased, is believed to produce a stronger response to retail price specials than a fill-in shopping trip, whose focus is on satisfying immediate product-related needs [6, 9].

The third type occurs when consumers visit the store for the primary purpose of buying specials offered by the retailers. These so-called cherry-pickers can have an adverse effect on profitability. Indeed, a loss-leader pricing strategy might attract so many cherry-pickers that the retailer ends up recording a loss. Addressing this concern, Walter and Jamil [14] found that cherry-pickers purchased significantly more loss-leaders than either major shoppers or fill-in shoppers. But Mulhern and Padgett [11] argue that the problem of cherry-picking is overstated, at least in the case of offline grocery stores. Their extensive investigation suggests

that only 7% of the shoppers surveyed were visiting the supermarket primarily for the specials. Cherry-pickers pay higher transaction costs than others to search and coordinate their shopping trips, and these costs keep the number of cherry-pickers in check. Thus in offline malls it is rare for loss-leader pricing to induce a loss by attracting too many cherry-pickers. The positive effect generally wins out: an increase in the number of visitors, which in offline malls correlates closely with an increase in revenue [15].

2.3 Transaction costs online and offline

Studies of loss-leader pricing have mostly addressed offline shopping malls, and it is inappropriate to apply their results to online malls, for the transaction costs on which the strategy depends have been lowered considerably by the Internet. For sellers, the Internet lowers search costs, making it easier to look for buyers. It also lowers the costs associated with making inventories available to buyers immediately. The Internet lowers search costs for buyers, too, for they can look for cheaper products using price comparison agencies, and can use the Internet to communicate with each other about products [5].

Buyers in an electronic marketplace move from store to store with a single click. Bakos [1] predicted that low search costs for online buyers would promote fierce price competition among sellers. Although online markets have not become the perfectly competitive market Bakos foresaw, it is true that lower transaction costs mean retail strategies for attracting customers and then enlarging their baskets cannot work as effectively online as in offline environments. However, researchers have hardly discussed this issue. Figure 1 illustrates our point that different levels of transaction cost online and offline will produce different degrees of effectiveness for loss-leader pricing in those two channels.
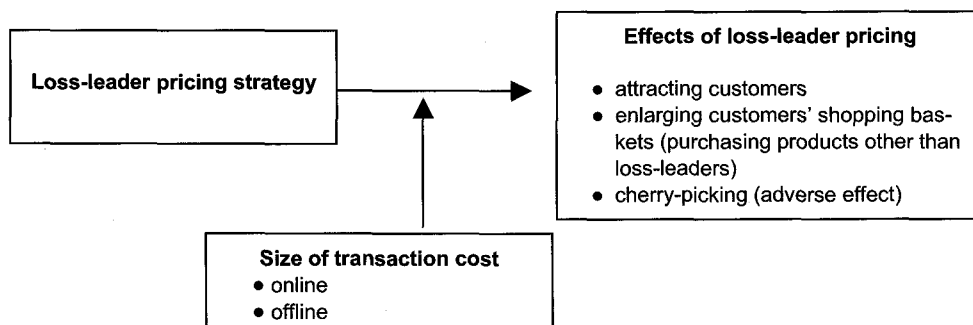
Figure 1. Research Framework

3. RESEARCH DESIGN AND METHODS

3.1 Research hypotheses

We drew in this study from a large body of research on e-business strategies and transaction costs. Its purpose

was to examine empirically the associations between transaction costs and loss-leader pricing strategies across different types of shopping channel. The dependent variable was the effectiveness of loss-leader pricing, effectiveness being a matter of (1) attracting customers, (2) enlarging their shopping baskets, and (3) promoting cherry-picking (an adverse effect). Table 1 shows the framework for constructing hypotheses.

Table 1. Framework for hypotheses

Effectiveness at:	Online (lower transaction costs)	Offline (higher transaction costs)
Attracting customers	lower	higher
Enlarging customers' shopping baskets	lower	higher
Promoting cherry-picking (adverse)	higher	lower

In online markets, customers can easily find the products they want by searching or using a price comparison agency. It is also easy for them to build customer communities to exchange information and opinions about products. Thus loss-leader pricing should be less effective in terms of attracting customers to online shopping malls than to offline malls. We hypothesize:

Hypothesis 1: A loss-leader pricing strategy is less effective at attracting customers to an online shopping mall than to an offline mall.

In an online market, stores are just a click away. In other words, moving to another store to buy products at a lower price entails no significant transaction cost. Thus, in an online shopping mall, loss-leader pricing should be ineffective at enlarging customers' baskets. We hypothesize:

Hypothesis 2: In an online shopping mall using a loss-leader pricing strategy, customers' shopping baskets will be smaller than in an offline mall using the same strategy.

Walters and Mackenzie [15] show that in an offline market, the adverse effects of cherry-picking on the effectiveness of loss-leader pricing are not worrisome. The high costs of searching and moving to other stores to buy cheaper goods keeps the number of offline cherry-pickers in check. However, the lower transaction costs of online shopping will allow customers to buy loss-leaders and then move on to other retailers without concern for transportation or search costs. Thus the likelihood of an adverse cherry-picking effect is much higher in online malls. We hypothesize:

Hypothesis 3: Customers who purchase only loss-leaders (cherry-pickers) will more prevalent in online shopping malls than in offline malls.

3.2 Operational definitions of variables

3.2.1 Effectiveness at attracting customers
Walters and MacKenzie [15] show that consumers find information about sales and loss-leaders in various ways as they decide where to go and what to buy. In this study, the effectiveness of loss-leaders in attracting customers was measured by asking subjects how advertisements or information about loss-leaders affected their choice of where to shop. Subjects responded twice to each of four questions—once for online, once for offline. All answers were registered on a seven-point Likert-type scale.

3.2.2 Effectiveness at enlarging customers' shopping baskets
Most researchers agree that the effect of loss-leaders is to draw customers into buying additional goods at regular prices (e.g. [14]). This can be a matter of (1) buying additional products impulsively; (2) buying goods on one's shopping list at the regular price, without searching for cheaper ones at other malls; or (3) buying products in that store, even though they are known to be on sale elsewhere, because of high moving costs. We surveyed subjects' shopping behaviors in these three situations with three questions, each on a seven-point Likert-type scale, and each asked twice, once for online and once for offline behaviors.

3.2.3 Degree of cherry-picking
Cherry-picking is the adverse effect of a loss-leader pricing strategy. The primary objective of cherry-pickers is to purchase low-priced low-margin products. High transaction costs limit cherry-picking, and lower transaction costs allow it to increase. Five questions on a seven-point Likert-type scale assessed the extent to

which subjects bought regular items along with loss-leaders. As with the other questions, each was asked twice, once for online and once for offline behaviors.

Table 2. Operational definitions of variables

Effectiveness at:	Operational definition	References
Attracting customers	Impact of loss-leaders on subjects' choice of where to shop. Impact of loss-leaders on subjects' decision to go shopping.	[15]
Enlarging customers' shopping baskets	Number of regular goods subjects purchased with loss-leaders.	[13]
Promoting cherry-picking	Degree to which subjects only purchased loss-leaders.	[11, 14]

3.3 Data collection

The study compared subjects' perceptions of their online and offline shopping behaviors. We developed 12 survey questions that used a seven-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). The subjects were instructed to answer twice for each question: one for online and once for offline shopping. The survey itself was conducted offline. In addition to the 12 measurement instruments, we asked two initial questions: first, how many times the subject had gone shopping, including regular grocery shopping, and second, how many times they had gone shopping, *excluding* grocery shopping. If subjects were responding faithfully, the answer to the second would be less than or the same as their answer to the first. We excluded surveys that gave a higher number for the second. A set of 202 surveys was reduced in this way to 135 valid returns.

We also collected log data from a Korean online shopping mall (www.woori. com) from April to June, 2004. The log data was gathered randomly and allowed us to track how many regular-price products were purchased by shopping mall customers who also bought loss-leaders. Through analysis of this complementary data set we confirmed that our results for H2 and H3 also obtained in the real world.

3.4 Subjects

We chose subjects who were experienced at both online and offline shopping. Of the respondents, 58 were men and 57 women. The largest number of respondents (51%) were in their twenties. Most went shopping either one to two or three to four times a week. Table 3 presents their demographic characteristics.

Table 3. Demographic characteristics of study sample

Item	Options	Number	Percentage	Items	Options	Number	Percentage
Gender	male	58	43.0	Age	under 20	36	26.7
					20-29	70	51.9
	female	77	57.0		30-39	13	9.6
					40-49	12	8.9
					50-59	4	3.0
Years using the Internet	less than 1	8	5.9	Hours of Internet use per day	less than 1	16	11.9
	1-3	17	12.6		1-3	52	38.5
	4-5	33	24.4		3-5	36	26.7
	6-10	68	50.4		5-7	17	12.6
	less than 1	8	5.9		7 or more	14	10.4
Number of times shopping online (per week)	1-2	48	35.6	Number of times shopping offline (per week)	1-2	82	60.7
	3-4	39	28.9		3-4	31	23.0
	5-6	27	20.0		5-6	18	13.3
	7-8	10	7.4		7-8	2	1.5
	9-10	5	3.7		9-10	0	0
	11 or more	6	4.4		11 or more	2	1.5

Table 4. Reliability and validity test results

	Factors						Alpha
	1	2	3	4	5	6	
A1 (off)	0.641						0.758
A2 (off)	0.701						
A3 (off)	0.567						
A4 (off)	0.554						
A1 (on)		0.690					0.8284
A2 (on)		0.755					
A3 (on)		0.793					
A4 (on)		0.780					
B1 (off)			0.676				0.7532
B2 (off)			0.522				
B3 (off)			0.761				
B1 (on)				0.644			0.7180
B2 (on)				0.678			
B3 (on)				0.565			
C1 (off)					0.573		0.7097
C2 (off)					0.678		
C3 (off)					0.641		
C4 (off)					0.745		
C1 (on)						0.782	0.7553
C2 (on)						0.767	
C3 (on)						0.779	
C4 (on)						0.791	

A: attracting customers
B: enlarging customers' shopping baskets
C: promoting cherry-picking

3.5 Validity and reliability tests

We tested reliability with Cronbach's Alpha, which measures internal consistency. Alpha for each variable was over 0.7, which is acceptable in the social sciences [7] (Table 4). We then examined the validity of the measurement by means of a Principal Components Factor analysis (PCA) using Varimax rotation. Factors with an Eigenvalue over 1.0, factor loading over 0.5, and communality over 0.5 were loaded. Two items did not meet these conditions; they were excluded, and a total of six factors were loaded (Table 4).

4. HYPOTHESIS TESTING AND DISCUSSION

4.1 Survey data analysis

In order to examine the effectiveness of loss-leader pricing in online shopping environments, this study focused on how the same customers behave differently in online and offline markets. The comparison was conducted by means of a paired t-test. Table 5 summarizes the descriptive statistics and Table 6 the t-test results.

Table 5. Descriptive statistics

Variables	Mean	S.D.	S.E.
Attracting customers (offline)	18.21	4.49	0.39
Attracting customers (online)	18.67	5.87	0.50
Enlarging customers' shopping baskets (offline)	12.62	3.36	0.29
Enlarging customers' shopping baskets (online)	10.40	5.06	0.44
Promoting cherry-picking (offline)	15.69	4.27	0.37
Promoting cherry-picking (online)	17.08	5.18	0.45

Table 6. t−Test results

Variables	t	d.f.	Sig.
Attracting customers	-1.67	134	0.288
Enlarging customers' shopping baskets	4.814	134	0.000*
Promoting cherry-picking	-3.429	134	0.001*

* $p < 0.01$

4.1.1 Effectiveness of loss-leader pricing in attracting customers

Hypothesis 1, which predicted that loss-leader pricing would be less effective in attracting customers to online shopping malls than in attracting them to offline malls, is rejected. Both online and offline malls received 18 points (out of 24) in the survey (Table 5). It appears that loss-leader pricing is effective in luring customers to either sort of mall.

4.1.2 Effectiveness of loss-leader pricing in enlarging customers' shopping baskets

Hypothesis 2, which posited that customers would purchase fewer regular-price goods along with loss-leaders in online shopping malls than in offline malls, is validated. Both the mean value (Table 5) and the results of the t-test (Table 6) indicate that customers lured by loss-leaders purchase more products when shopping offline than when shopping online.

4.1.3 Adverse effect of loss-leader pricing: promoting cherry-picking

Tables 5 and 6 show that loss-leader pricing encourages cherry-picking online much more than it does offline. Thus hypothesis 3 is validated. Table 7 summarizes the results of hypothesis testing.

4.2 Analysis of online shopping mall log data

We used sales data from an online shopping mall (www.woori.com) to confirm the results of our hypothesis testing. Specifically, we compared the number of regular-price products purchased by customers who bought loss-leaders to the number of such products purchased by customers who did not.

The loss-leaders were Kimchi, men's pants, baby table sets, yogurt makers, jade mattresses, pillows, audio sets, jackets, and bathtubs. A total of 1,619 customers purchased the loss-leaders, while 3,000 did not.

Table 7. Summary of hypothesis testing

Hypothesis	Result
H1: The effectiveness of loss-leader pricing in attracting customers to online malls	rejected
H2: The effectiveness of loss-leader pricing in enlarging customers' online shopping baskets	accepted
H3: The adverse effect of loss-leader pricing of increasing cherry-picking in online malls	accepted

Table 8 shows that the latter group purchased an average of nearly three (1.99 + 1) regular-price items, while the former group rarely bought any regular-price products. The F-test indicates that the two groups are significantly different (Table 9).

Table 8. Descriptive statistics: comparison of the number of regular—price products bought by loss—leader purchasers and non—loss—leader purchasers at www.woori.com

	N	Mean	S.D.	S.E.
Non-loss-leader purchaser	1619	1.99	2.96	5.41E-02
Loss-leader purchaser	3000	0.057	0.33	8.16E-03

Table 9. F—test results

	Sum of squares	Df	Mean square	F	Sig.
Between groups	3946.839	1	3946.839		
Within groups	26521.08	4618	5.743	687.246	0.000*
Total	30467.92	4619			

* $p < 0.01$

The log data indicates that loss-leader pricing in online shopping malls encourages cherry-picking and is not an effective means of enlarging customers' shopping baskets.

5. CONCLUSION

This study analyzed customer behaviors in two different market environments, online and offline, to test the effectiveness of loss-leader pricing in online shopping malls. The implications of the study are as follows.

First, loss-leader pricing is widely used in online shopping malls without serious discussion of its effectiveness. This study is the first to test its effectiveness empirically.

Second, the study found that loss-leader pricing is effective in increasing the number of visitors but does not lead them to buy regular-price goods along with the loss-leaders. As the online data shows, online customers who buy specials tend to buy *only* specials. While online shopping malls may need to use loss-

leader pricing to attract customers, sellers adopting this strategy will incur losses unless they manage it very carefully.

Third, most strategies used by online shopping malls are strategies developed in offline shopping environments. This study shows that consumers behave differently in the two different channels. Online retailers must grasp the source of these behavioral differences and build up effective strategies accordingly.

This study has a couple of limitations. First, more than three-quarters of the subjects were under the age of 30. Consumers generally gain economic power as they grow older, and more economic power may lead them to respond to loss-leader pricing differently. Second, further studies along these lines should consider factors not dealt with here, including product type (e.g., experienced goods vs. standardized goods) and personal characteristics.

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