

# CONSUMERS' EXPERIENCES, OPINIONS, ATTITUDES, SATISFACTION, DISSATISFACTION, AND COMPLAINING BEHAVIOR WITH VENDING MACHINES

Dong Hwan Lee, Manhattan College

## ABSTRACT

Despite the ever increasing presence and penetration of vending machines into consumers' lives, there have been no studies to date in the marketing and consumer behavior literature that shed light on consumers' experiences and consumption behavior involving vending machines. This study is the first of its kind to report, based on consumer survey data, consumers' usage behavior, and opinions and attitudes toward the services rendered by food and beverage vending machines. Consumer satisfaction/dissatisfaction and complaint behavior are also investigated. The results reveal that consumers consider vending machines as quite useful, beneficial, important, and meaning a lot to them - more so than TV or red wine! However, consumers generally give tepid evaluations about vending machine services, and their level of satisfaction starkly contrasts with their high involvement. Their experience with the vending machine is not up to par with comparable retail store shopping experiences. The inadequate system of requesting refunds and filing complaints, a chronic source of consumer dissatisfaction, emerged as the most serious drawback of vending machine services. Managerial implications of this and other findings, along with future research issues are discussed.

## INTRODUCTION

More than two decades ago, Quelch and Takeuchi (1981) predicted that the vending machine would become one of the most important non-store marketing channels. Comparing the two million vending machines as cited in their article at that time, with the more than seven million vending machines in operation in the U.S. currently (Leaner 2002), their prediction has surely materialized. Presently, the vending

machine business is a \$41 billion industry (National Automatic Merchandising Association 2002) and one of the most pervasive retail business forms, though still low-profile.

Vending machines and many consumer products as consumer products have a symbiotic relationship. As more people have joined the workforce during the past several decades and their busy social life increasingly places more value on time and convenience, vending machines have become an indispensable part of many people's daily lives. They offer consumers a variety of products including foods, snacks, beverages, newspapers, cigarettes, laundry products, cosmetics, hosiery, personal care items, postage stamps, contraceptive devices, and even paperbacks and CDs.

Food and beverages account for about 85% of vending machine sales in the U.S., with vending machines accounting for about 20% of soft drink sales (Vending Times 2002). Vending machines also take on an ever-increasing role in serving employees in the workplace in the new economy. Since downsizing and workforce reductions have been accelerating in Corporate America, companies are increasingly reducing and replacing food service facilities and staffs with self-serving vending machines (Leisure Week 1999). Nowadays employees can find at their workplace almost any food and beverage item from pizza to frozen dinners. "Light" entrees, fresh salads, fruits, and dairy products are often part of their canteens and dining facilities.

Given the ever increasing presence and the pervasiveness of vending machines in the lives of consumers, it is surprising that there have been to date no studies in the marketing and consumer behavior literature that shed light on consumers' usage behavior, experiences, opinions, and attitudes, not to mention their satisfaction, dissatisfaction, and complaining behavior, with the vending machine services. This glaring lack

---

of knowledge about consumer behavior regarding vending machine service is even more surprising, considering the fact that our knowledge and understanding of consumer behavior in the retailing field have dramatically increased during the past two decades. The present study is conducted as a first step to fill such a gap in consumer behavior and non-store retailing literature.

## VENDING MACHINE BUSINESS

### The Value of Vending Machine Services

**For Marketers.** Vending machines compliment the traditional distribution channels and enable marketers to increase the reach and intensity of their retail distribution network. Because of their around the clock self-service capability, vending machines are typically placed outdoors and in unattended environments such as the corners of factories and offices, large retail stores, gasoline stations, railroad stations, hotels, restaurants, airports, bookstores, and shopping malls. Their compact size means they can fit into many places where there is not enough space for a full-sized convenience store. A strong presence in the vending machine channel helps to enhance visibility and strengthen brand recognition in the long term (cf. Phillips 1992). The greater the exposure afforded to brands via vending machines, the stronger the brand cognition and image recognition in the integrated marketing communications program. This strategy is consistent with the fact that most successful bottlers in the United States maintain a strong presence in the vending channel. With little overhead, margins are much higher for the sales made in vending machines than for those in regular retail outlets. While the profit margin of grocery stores is 1.3 percent (before tax 2000 - 2003 average (Almanac of Business and Industrial Financial Ratios 2000-2003), the profit margin of food and beverage vending business is 3.8% percent (before tax average of 1998-2002, NAMA 2003).

**For Consumers.** Vending machines are

mainly valued by consumers for their convenience and time saving benefit (Quelch and Takeuchi 1981). They offer consumers instant transactions without the need of intermediaries; just press what you "see and want" and the product is delivered into your hands with instant gratification. Another value of vending machines lies in the fact that they offer 24-hour availability and reasonably fresh and ready to serve products (Kotler 2003). These transactional characteristics make vending machines particularly appealing for the products that are demanded around the clock, that are of impulsive demand, that do not require sales help or need to be closely inspected before purchase, and that can be sold for relatively small amounts of cash.

### Vending Machine Services Problems

Despite the many positive aspects, there are inherent drawbacks to vending machine services which may negatively affect consumers' shopping experience and the vending machine industry in the long term. First, the very nature of nonpersonal, no human contact, transactions can create unique problems that frustrate and potentially alienate consumers. Most consumers still prefer shopping in stores over shopping from vending machines. They also prefer to talk to a person before making a purchase (Trachtenberg 1994). Some consumers are not comfortable with the lack of human touch in vending machine transactions (Leaner 2002). Unlike its retail store counterpart, the machine itself cannot interactively offer consumers services accompanying a transaction, and is confined to merely dispensing the product in return for payment (even this can be a problem as discussed later in the study). When consumers are dissatisfied with their purchase, recourse is not available at all or is not as convenient as at a regular retail store. Another downside is that consumers sometimes do not feel secure because vending transactions occur in unattended and isolated environments in late hours such as on street corners in a big city or by a forlorn little motel. In addition, people become captive customers of vending machines under certain circumstances such as when no retail

outlets are available in the surrounding area or all nearby stores are closed. Products sold via vending machines are also more expensive than their counterparts available in traditional retail stores (cf: Beverage World 1992) because of their unique values as described previously and the high maintenance cost of the machine operation. All these factors contribute to consumers' negative consumption experiences with vending machine use.

### **Competition in Vending Machine Business**

If vending machine operators do not have a clear understanding of these potential problems and fail to manage them properly, then the problems may have a damaging impact on the vending machine operator's success and the industry's continued growth in the long term. Although the vending machine business often deals with captive consumers, it faces competition just as other consumer businesses do. One of the factors that keep the competitive pressure on the small business owner segment is the low entry barrier (National Automatic Merchandising Association 2002). The low entry has created a market condition that replaces inefficient small vending machine operators with new aspiring vending machine owners constantly. There is also no let up in the competitive pressure from retail stores in the neighborhood. One industry expert advised that vending machine success hinges on offering consumers unique benefits over existing stores, either in lower costs, reliable functions, or quicker service (Learner 2002). The large, institutional segment serves academic communities, hospitals, big corporations, and office buildings. These institutions replace their vending machine operator when they consider the service and quality to be inferior. Recent improvements in food and leisure service at many colleges and universities put more pressure to vending machine operators. Students and staff make the extra effort to walk to the campus center, where they can have better choice and service of drinks or snacks, passing the vending machine if it frequently malfunctions or does not have what they want. The vending machine business is also

vulnerable to the economic down turn as are other consumer businesses. Consumer spending in vending machines decreased about 5 percent in 2001 due to the sagging economy (National Automatic Merchandising Association 2002).

### **THE PRESENT STUDY: MOTIVATION OF THE STUDY**

Although the vending machine industry has witnessed remarkable growth and progress during the past two decades, most changes and improvements in the industry can be characterized as technology-driven, product-oriented, and financially motivated. It is important that vending machine business owners understand consumer behavior regarding vending machine use in order to develop a more customer-oriented marketing strategy, considering the various competitive forces discussed above. This will ensure continued success and allow the industry to compete more effectively with increasingly efficient regular retail stores and other forms of non-store retailers.

One of the challenges facing the vending machine industry is that the very nature of vending machine services makes it very difficult to systematically monitor machine-consumer transactions and/or collect data from consumers regarding their vending machine use in order to deal with these problems. This is especially the case because about 75 percent of the vending machine business is comprised of small-sized business owners who cannot afford such monitoring and research expertise (National Automatic Merchandising Association 2002).

Although several marketing management textbooks touch on the vending machine, their treatment of the topic is less than a page, describing the different types of vending machines, the kinds of products sold, and the technological advances of these machines (see Kotler 2003, Lamb, Hair, and McDaniel 2002; Peter and Donnelly 2003).

There have been no known studies in marketing and consumer behavior literature that have shed light on consumers' usage behaviors and experiences with vending machine services.

A better understanding could be extremely valuable for vending machine businesses in improving their ability to serve consumers more effectively and enhance the value of vending machine services to society.

This study is intended to make an incremental contribution by enhancing our understanding and knowledge about consumers' behavior with vending machine services, including satisfaction, dissatisfaction, and complaining behavior. Based on consumer survey data, this study will explore such issues as: the attributes consumers consider important and relevant for vending machine use; consumers' involvement with vending machines; what consumers think of vending machine services; how they feel about the level of service; the aspects of vending machine services they like or do not like; the level of their satisfaction or dissatisfaction with the service; the areas they want to see improvements in; the kinds of complaints they have and how they resolve those complaints. This study is exploratory and descriptive in nature rather than following a rigorous line of formal hypothesis testing because there is no prior research on vending machine services.

### PRELIMINARY STUDIES

Three focus group studies were conducted to explore consumer behavior with food and beverage vending machine services. The exploratory focus group studies had several objectives: 1) to learn about consumer behavior with respect to food and beverage vending machine use, 2) to identify the attributes and benefits of vending machine services that are important to consumers, 3) to understand as much as possible what consumers think and feel about their experience with vending machines, 4) to learn about consumers' satisfaction and dissatisfaction experiences and complaining behavior with vending machine use, and 5) to gather other relevant information which could help develop measurement instruments to conduct a formal survey about consumer experiences with food and beverage vending machines.

Twenty-three participants who said they used

vending machines frequently were recruited at an academic community in the northeastern United States. Three focus group sessions were conducted by the author or a graduate who was trained in focus group studies. Each session consisted of a balanced mix of administrative personnel, faculty, and students. It was found that both student and non-student populations on campus used vending machines very frequently and women appeared to patronize them more than men. Quite a few indicated that they used vending machines almost every day. Undergraduate students used vending machines far less frequently and showed a lower level of interest in them than did non-student participants. Graduate students used vending machine services heavily because they spent a greater amount of time in their department offices and campus buildings.

The focus group studies identified the key attributes and benefits of food and beverage vending machine services: convenience, consistency and reliability of the machine's functions, accessibility (i.e., location), product variety, price, and the security at the vending machine location. It is worth noting that some participants mentioned that "they don't have to deal with people" and "vending machines are less of a hassle than going to the stores." Many of these attributes confirm previous observations and insights documented in the industry reports as reviewed in this introduction. Insights were gained on the participants' dissatisfied experiences and complaining behavior as well. Many of the participants described a variety of unpleasant and dissatisfying experiences with the food and beverage vending machine service. They also expressed various emotional reactions related to the dissatisfying experiences that included frustration, resignation, anger, bitterness, etc. Their reactions and complaints in response to such dissatisfactions were as diverse as their emotional reactions, ranging from doing nothing, speaking to others, filling out a refund request card, calling the company, and shaking or kicking the machine. Some even confided that they swore at the machine giving them trouble. These findings were used to develop classification schemes of "complaints" and "actions taken" (to be discussed

later). Insights and other relevant information generated from the focus group studies guided the design of the comprehensive survey instrument of the main study.

## THE MAIN STUDY

### The Sample and Data Collection

A campus mail survey was used to collect data from a university campus in the northeastern United States from all constituents of the academic community - the administrative staff, the faculty, and the students (graduate and undergraduate). The cover page of the survey (see Appendix A) explained its purpose as part of a research project in the business school to learn of the consumers' experiences with food and beverage vending machine services on campus. Five hundred questionnaires (see Appendix B) were distributed to various units of the university - administrative offices (e.g., Admissions, Human Resources, and Registrar), academic departments (e.g., History, Marketing, and Physics), academic support units (e.g., Computer Center, Infirmary, Physical Plant), and dormitories.

A concerted effort was made to maximize the response rate. The cover page of the survey emphasized the importance of participating in the survey to improve the quality of vending machine service around campus by stating that the results of the study would be sent to the company running the campus vending machine services. The research team made contacts with the secretaries of the campus units and asked their cooperation in distributing the surveys to the people in their units. The two page survey was formatted to allow a completed survey to be folded in half, stapled, and then returned to the research team through campus mail to the address that was already printed on the lower half of the cover page. The secretaries were also asked to collect and mail the completed surveys in their division one week after the surveys were distributed. To further increase the response rate, the research team personally requested division heads to encourage their staff and members' participation in the study. Many of them actually did; some even circulated a memo

encouraging participation in the survey. The data from graduate students were collected from their academic offices rather than from the graduate student dormitories because it was found in the focus group studies that many graduate students were living off campus. Collectively, 239 surveys were returned through these combined efforts, resulting in a 47.8 percent response rate.

For undergraduate students, 300 questionnaires were distributed in dormitories. An arrangement was made so that the surveys were available in each of the dormitory offices and the student advisor in each dorm was requested to encourage students' participation. After one week, completed questionnaires were collected in the dormitory offices. Twenty seven surveys were collected, resulting in a mere nine percent response rate. The result, though disappointing, was not surprising considering the undergraduates' low interest in the vending machine as already exhibited in the focus group studies.

Excluding 15 surveys whose responses to main questions were incomplete, a final combined sample of 251 was achieved, yielding an overall response rate of 31.4 percent of the initial 800 surveys. This response rate is considered satisfactory given the very low undergraduate response rate. The sample consists of 38 percent (94) administrative personnel, 28 percent faculty (71), 24 percent graduate students (60), and 10 percent undergraduates (24). Thirty-nine percent of the sample are singles, 50 percent are married, and the remaining 11 percent fall in the other (including missing data) category and non-responses to the question. The median age of the respondents is 36 with a range between 18 and 67. Sixty-seven percent of the respondents were female and 33 percent were male, which is consistent with the focus group studies in which female participants showed a higher level of food and beverage vending machine use. The above sample demographic profile indicates that the opinions of and experiences with the vending machine use of the participants in this study reflect reasonably well those of vending machine users in the sampling frame.

## METHOD AND RESULTS

### Involvement with Food Vending Machine Services

Zaichkowsky (1985) defined involvement as an individual's enduring perception of how relevant an object is, based on inherent needs, values, and interests. Involvement is one of the most important constructs that affects consumers' consumption experience. Therefore, it was of high interest to know how much (or little) the participants were involved with food and beverage vending machine services. The construct has been used in the services marketing context as well as in the traditional physical marketing context. A subset of Zaichkowsky's (1985) personal involvement inventory (PII) was used to measure the participants' involvement with vending machine services. Although the PII was originally developed as a set of twenty semantic differential scale items, later research revealed its redundancy (Lichtenstein, Block, and Black 1988; Munson and McQuarrie 1987). Reduced sets of items have been shown to effectively measure the construct (Celuch and Taylor 1999, Stafford and Day 1995, Zaichkowsky 1994). Seven items were initially chosen from the PII by the author by considering their face validity and relevance to vending machine use. The seven items, then, were presented to the focus group participants for their comments on their relevance regarding vending machine use. Based on careful analysis of their comments, four items were selected to be included in the study. Due to the fact that involvement was designed to be measured in the beginning section and the space constraint of the survey, the brevity of the scale was an important practical concern. The four items are: 'useless - useful,' 'unimportant - important,' 'not beneficial - beneficial,' 'means nothing to me - means a lot to me.' Seven point semantic differential scale items (1 to 7) were used to measure the participants' responses to these items. Following Zaichkowsky, the four items were used as the anchors for responses to the question, "In general, I consider the food and beverage vending machine \_\_\_\_." To check whether the four item scale constitutes the uni-

dimension of involvement with vending machines, the participants' responses were submitted to the factor analysis. As expected, all four items were loaded on one factor and they accounted for 69.72% of the variance (see Appendix C for detail). The Cronbach's alpha of this four item scale was .85. The observed alpha for this four item involvement scale is considered high because the alpha is a positive function of the number of items in the composite and when the number of items is small in the composite, the alpha tends to be conservative (Churchill and Peter 1984; Lord and Novick 1968).

The results showed that means for the four items were: 5.74 for 'useless - useful,' 5.23 for 'unimportant - important,' 5.28 for 'not beneficial - beneficial,' and 5.11 for 'means nothing to me - means a lot to me.' The mean value of the four items was 5.34. Zaichkowsky (1985) theorized that the theoretical mean for all 20 scale items of the PII is "4" and that a score below 3.54 indicates the product is a low involvement item while a score above 5.55 indicates it is a high involvement product. The mean values of some selected products presented in her 1985 study are: instant coffee 3.35, mouthwash 3.7, red wine 4.2, headache remedy 4.55, color TV 4.85, laundry detergent 5.15, calculator 5.6, and automobile 6.2. A later study reported a mean value of 4.96 for laptop computers (Lee and Olshavsky 1995). It may be feasible, although not testable in this study, to think that people whose involvement with vending machines is high may have returned the survey more than those whose involvement is low.

Taken together, it was concluded that the respondents' involvement with the food and beverage vending machine service is fairly high. The participants considered vending machine services as very useful, beneficial, important, and as meaning a lot to them.

### Usage and Popular Items on the Vending Machine

Although we know and observe that many people use vending machines, there is no reported statistics about the frequency of their use.

Therefore, we wanted to quantify the consumers' usage frequency. The participants were asked how many times they use vending machines during a week. On average, the participants used vending machines about 3 to 4 times ( $\bar{x} = 3.43$ ,  $sd = 2.86$ ) during a week. Eighty percent indicated that they use vending machines "1 - 5" times a week.

Next, analysis turned to discovering which items are popular in food and beverage vending machines. Respondents were asked to rank product types (that were identified in the focus group studies) according to how often they buy them from vending machines. Canned beverages are the most frequently purchased item, followed by a variety of snacks (including cookies, chips, candy bars, popcorn, etc.), and bottled soft drinks, respectively. Healthy foods (e.g., yogurt) and frozen foods (e.g., microwave meals) are also shown to be popular items. Hot drinks, milk, and fresh fruits (in that order) are less frequently purchased in vending machines. This result confirms previous industry reports that beverages and snacks hold a lion's share of the vending machine business. Cold beverages account for almost 30 percent and snacks account for about 26 percent of vending machine sales (Vending Times 2002).

### **Opinions and Attitudes Toward Vending Machine Services**

First, participants' opinions about food and beverage vending machine operations were probed by asking "How would you evaluate the food and beverage vending machines operations on campus?" Two 7 point bipolar scales, 'unfavorable - favorable' and 'negative - positive' were used to measure the participants' responses. Their overall evaluation, although slightly above the neutral point ( $\bar{x} = 4.17$ ) is a far cry from an enthusiastic response. Rather, it represents a tepid evaluation, considering participants' high involvement with vending machines. Next, their opinions and evaluations of specific aspects of vending machine operations were analyzed. These measurement instruments and mean values are presented in Table 1. In line with their

lukewarm evaluations, six of the twelve specific aspects of vending machine service operations were evaluated below the median point (4) of the scale. Three areas that received the lowest evaluations are the unavailability of filing a complaint ( $\bar{x} = 2.44$ ), the high price of products ( $\bar{x} = 3.01$ ), and inaccurate/no change ( $\bar{x} = 3.30$ ). Three areas were evaluated favorably. Respondents gave high marks for the convenient location of the vending machines ( $\bar{x} = 5.27$ ); the clean maintenance of vending areas ( $\bar{x} = 4.73$ ) and the freshness of the items dispensed from the machine ( $\bar{x} = 4.45$ ).

Although many of the items asked in the questionnaire may be context-specific to a particular academic community, it is reasoned that the findings are very likely to reflect consumers' experiences with food and beverage vending machine services in other campus communities, considering the similarities of the vending machine business at colleges and universities. It is also reasoned that the result would be a close representation of ordinary users' evaluations of the services at similar venues such as large office buildings, considering the fairly diverse profile of the participants.

### **Satisfaction/Dissatisfaction with Vending Machine Services**

Participants' satisfaction and dissatisfaction with vending machine services were analyzed. First, their responses to "Overall, how satisfied or dissatisfied have you been with your experiences using the vending machines on campus?" were measured on a 7 point global scale of 'highly dissatisfied - highly satisfied.' This global measure of satisfaction has been used in past consumer satisfaction research (Lee and Leelakulthanit 1994; Oliver and Bearden 1983). The respondents felt neither positive nor negative toward their experience with the vending machine services ( $\bar{x} = 4.0$ ,  $sd = 1.46$ ). Next, their level of dis/satisfaction with the vending machine service in general, not limited to their on-campus vending machine experience, was analyzed. They were asked, "Overall, how satisfied or dissatisfied have you been with your experiences using vending

**Table 1**  
**Evaluations and Opinions of Vending Machine Services**

<u>Items*</u>	<u>Mean (SD)</u>
The vending machines are 'inconveniently - conveniently' located.**	5.27 (1.53)
The areas in which vending machines are located are 'dirty - clean.'**	4.73 (1.55)
Products dispensed from the machines are 'stale - fresh.'	4.45 (1.44)
The bill changing machines 'never - always' function properly.	4.39 (1.90)
The vending machines 'never - always' function properly.	4.18 (1.40)
The range of product types available in the machines is 'narrow - wide.'**	4.01 (1.57)
The variety of available choices for each product type in the machines is 'poor - excellent.'	3.81 (1.45)
Security in the areas where vending machines are located is 'poor - excellent.'	3.62 (1.59)
The nutritional information on the items in the vending machine is 'difficult - easy' to read.	3.61 (1.90)
The vending machines 'never - always' require exact change.	3.30 (1.36)
The prices of products in the vending machine are 'expensive - inexpensive.'	3.01 (1.53)
The available means in which you can file a complaint are 'unsatisfactory - satisfactory.'	2.44 (1.65)

\* In the survey, the bipolar adjectives were anchored on a 7 point scale which was presented separately to respondents from the question itself. For example, Question: "The vending machines are \_\_\_\_\_ located."

Response: 'inconveniently 1 2 3 4 5 6 7 conveniently'

\*\* These questions were reversely phrased in an effort to minimize potential pattern responses, and hence the means of those items were converted to make them comparable to the means of other items.

machines in general: on campus and off campus?" Their responses on the same global scale ( $\bar{x} = 4.31$ ,  $sd = 1.34$ ) indicate that their experience with the vending machine service in general is slightly better than their experience with the vending machine service on campus. Taken together, the results indicate that the level of services consumers experience with vending machine use is not sufficiently satisfactory in light of the benchmark standard of consumer satisfaction reported by Jones and Sasser (1995). They reported that when measured on a 1 (completely dissatisfied) to 5 (completely satisfied) scale, satisfied consumers (4) are six times more likely to defect than completely satisfied consumers (5). They concluded that in today's highly competitive marketing environment, even satisfaction is not sufficient. Therefore, this result indicates that food and beverage vending machine business owners, especially the on-campus operators, must improve their services and operation. Further analysis revealed the interesting fact that there are negative correlations between the participants' satisfaction and their involvement with vending machines ( $r = -0.30$ ,  $p = .001$  for general

satisfaction;  $r = -0.28$ ,  $p = .01$  for on campus satisfaction). The higher the degree of involvement with vending machines, the greater the degree of dissatisfaction with the vending machine service.

#### **Comparison of Vending Machine and Retail Store Shopping Experiences**

The vending machine represents one of the most important alternative distribution channels to traditional retail store for consumers, especially for food and beverage items. Therefore, it is especially useful to find out how consumers compare their shopping experience with vending machines to their shopping experience for similar products at traditional retail stores. Although retail stores and vending machines offer different kinds of benefits and consumers may use different shopping criteria, consumers are likely to be able to make an overall comparative evaluation, considering that retail stores are the closest substitute for vending machines for food and beverage items and the two compete at the core benefit level (Kotler 2003). Therefore, this



**Table 2**  
**Vending Machine Shopping vs. Store Shopping**

*"How would you compare the above feeling\* with your equivalent shopping experiences at regular retail stores?"*

<u>Scale</u>	<u>Percentage</u>
1. much worse	14.6
2. somewhat worse	25.5
3. slightly worse	17.8
4. about the same	27.1
5. slightly better	4.0
6. somewhat better	4.0
7. much better	<u>6.9</u>
	100% (total 247)

\* This refers to the overall satisfaction/dissatisfaction with the vending machine experience in general that was asked in a preceding question (see Appendix B).

comparative evaluation will help vending machine operators diagnose the level of their services and operation. The respondents were asked how their shopping experiences with vending machines compare to their comparable shopping experiences at regular retail stores. Responses were measured on a 7 point scale of 'much worse' (1) to 'much better' (7). It was revealed that their satisfaction with vending machines is lower than the satisfaction they experienced at regular retail stores ( $M = 3.2, sd = 1.65$ ).

As shown in Table 2, only 10.9 percent considered their vending machine experience 'better' than their equivalent retail store experience, whereas 43.3 percent thought their vending machine experience was 'worse' and 27.7 percent considered the two shopping experiences to be the same. It was also determined that the more the respondents were involved with vending machines, the more negatively they viewed their experience with vending machines as compared to their comparable retail store shopping experiences ( $r = -0.16, p = .012$ ). This finding is consistent with the

participants' generally negative or lukewarm experiences with vending machine services. Therefore, it is concluded that consumers' shopping experience with vending machines is not up to par with comparable shopping experiences in retail stores.

#### **Dissatisfying Experiences with Vending Machine Services**

There are many anecdotes and personal experiences which attest that vending machines give rise to a host of problems for their users. This study is intended to identify and document such dissatisfying experiences and incidents regarding food and beverage vending machine use. The participants were asked to describe an occasion in which they had a negative experience with a vending machine. Two hundred forty-four out of two hundred fifty-one participants responded to this open-ended question with 189 respondents (77%) indicating the incident took place on campus and 55 (23%) indicating the incidents took place off campus. One hundred

**Table 3**  
**Dissatisfying Experiences with Vending Machine Services**

<u>CATEGORIES</u>	<u>FREQUENCY</u>
1. <i>Machine Malfunction</i>	109
<ul style="list-style-type: none"> <li>• The machine took money but did not dispense the desired item.</li> <li>• The product got stuck in the machine.</li> <li>• The machine repeatedly rejected dollar bills.</li> <li>• The machine gave incorrect or no change.</li> <li>• Coins got stuck in the machine.</li> <li>• The machine dispensed an incorrect item.</li> <li>• No change was returned when an item was not available.</li> <li>• A can of soda opened inside the machine, making a mess.</li> <li>• A finger got hurt on a vending machine which had a faulty coin return lever.</li> </ul>	
2. <i>Inadequate or No System of Requesting Refunds and Filing Complaints</i>	63
<ul style="list-style-type: none"> <li>• Refunding required unreasonable amounts of effort.</li> <li>• Stale items could not be exchanged.</li> <li>• Complaint cards were not available.</li> </ul>	
3. <i>Lack of Responsiveness to Complaints</i>	37
<ul style="list-style-type: none"> <li>• The Vending Services Office was not responsive to complaints.</li> <li>• Never got any response after mailing out a refund card.</li> <li>• Didn't get the refund that they said they would process when I called.</li> </ul>	
4. <i>Poor Quality of Food Items in Vending Machines</i>	20
<ul style="list-style-type: none"> <li>• The food item was stale.</li> <li>• Food quality was abominable.</li> <li>• When school was not in session, milk was spoiled.</li> <li>• Apples were bruised.</li> <li>• Peaches were wrinkled.</li> </ul>	
5. <i>Inadequate Service with Vending Machine Operations</i>	11
<ul style="list-style-type: none"> <li>• Preferred items were out of stock in the vending machine.</li> <li>• Many items were not stocked in the vending machine.</li> <li>• No bill changer was available in the vicinity.</li> <li>• No napkins or paper trays were available at the vending machine site.</li> </ul>	
6. <i>Others</i>	4

forty-eight (61%) indicated the incident happened within the past year, indicating the experience is relatively fresh in their memories. The high proportion of respondents (97%) to this question suggests that the negative feelings arising from the incidents were strong. Respondents' descriptions were classified into five broad categories: 1) various kinds of machine malfunctions and defective vending machines; 2) the inadequate system of refund request and filing complaints 3) the vending machine operators' lack of

responsiveness to users' complaints; 4) quality of food items offered in the vending machine; 5) the various inadequate service aspects surrounding vending machine operations.

Next the respondents' emotional status at the time of the incident they had described was probed, asking "how did you feel when you were faced with the situation just described?" Their responses were measured on two 7 point scales of 'very frustrated' (1) to 'not at all frustrated' (7) and 'very angry' (1) to 'not at all angry' (7). The

means were 1.96 (sd = 1.18) for 'frustrated' and 2.30 (sd = 1.25) for 'angry.' It is evident that the respondents experienced very strong negative emotions in relation to the incidents.

### **Complaining Behaviors**

As described previously, vending machines give rise to a host of problems and frequently frustrate users. To discover what kinds of complaining actions the users take when they experience problems, respondents were asked, "what action did you actually take regarding the problem with the vending machine you just described?" A list of alternatives was provided that had been identified in the focus group studies.

The respondents were told to check more than one item if appropriate. Research has shown that some consumers take multiple complaining actions (Blodgett and Granbois 1992, Huefner and Hunt 2000), as was confirmed in the focus group studies. Table 4 presents various complaints actions and descriptive statistics of the actions the respondents took. The complaint actions are grouped into no action, private action, negative word of mouth, exit, public action, and redress seeking action categories. As shown in the table, users reported various complaining behaviors. The private form of complaining behavior, "pounded or banged the machine out of frustration or anger" is ranked first (19.4%), closely followed by no action (18.9%). There may well be various motives behind this action. If such an act is out of simple emotional venting, it may not be a complaint action. However, if the intention was to leave behind a physical sign of displeasure to the vendor by inflicting physical damage on the machine, such an act is clearly a form of private complaint action. Another prevalent type of complaining was negative word of mouth by "talking to other people about the incident" to express their frustration with the incident (18.3%). Sixteen percent of the respondents stopped using the machine that gave them trouble (exit). Some respondents engaged in a public form of complaining either by "posting a note of warning on the machine for others" (5.4%) or by talking to the available personnel on site or a nearby office

(5.8%). Some determined consumers actually took "redress seeking complaining actions." They filed their complaint and asked for a refund by filling out a refund request form and mailing it (13.1%). A small number of people took pains in calling the company to lodge their complaint and ask for a refund (3.1%).

### **Comparable Retail Store Complaints**

Since many consumers have dissatisfying experiences with various small retail store purchases similar to ones made with vending machines, we were very interested in finding out how the respondents would have reacted if they had experienced a similar incident in a traditional retail store. The question "if you had the same kind of experience at a regular retail store, were you likely or unlikely to have taken some action? (e.g., ask for a refund, ask for a replacement, complain to the service clerk)" was asked. The respondents' reactions to this inquiry were measured on a 7 point scale of mostly likely (1) - not likely (7). The overall mean is 1.91 (sd = 1.56) which is much lower than median point of 4. This may help us understand why the respondents expressed strongly negative emotions at the time of the incidents as described previously. That is, considering that they most likely would have complained to the store employee if they had such an incident (or a similar one) in a store, it is natural that their frustration and/or anger were intense because nobody was on site to complain or no system of remedy was available. Further analysis with the mean values broken down into the complaint action categories offers additional insight. The mean values presented in the last column of Table 4 reveal the pattern of correlations between the complaint actions they took and the likelihood of taking remedy seeking actions in stores. That is, as the respondents' complaint actions regarding vending machines move from no action, to private action, to public action, to remedy seeking actions, the likelihood of their taking remedy seeking actions at regular retail stores also gets higher. The oneway ANOVA showed that the means were significantly different ( $F = 2.50$ ,  $df = 8$ ,  $p = 0.017$ ). This may

**Table 4**  
**Summary of Complaint Actions Taken**

COMPLAINT ACTIONS	VENDING MACHINES			RETAIL STORES		
	Frequency	Percentage	Rank	If it happened in a store*		
				$\bar{x}$	(sd)	frequency
<i>No Action</i>						
Did nothing	85	18.9%	2	2.44	(2.04)	55
<i>Private Action</i>						
Pounded or banged the machine out of frustration or anger	87	19.4	1	2.44	(1.91)	27
<i>Negative Word of Mouth</i>						
Talked to people about the incident and/or warned them of it	82	18.3	3	1.61	(0.96)	28
<i>Exit</i>						
Stopped using the vending machine that caused them trouble	72	16.0	4	1.91	(1.59)	46
<i>Public Action</i>						
Posted a note on the machine warning others	24	5.4	7	1.50	(1.23)	6
Talked to available personnel on site or at a nearby office	26	5.8	6	1.36	(0.50)	14
<i>Redress Seeking Action</i>						
Filled out and mailed a Refund Request Form	59	13.1	5	1.51	(1.12)	13
Called the company to complain	14	3.1	8	1.62	(1.12)	13
	449**	100%				

\* If you had the same kind of experience at a regular retail store, were you likely or unlikely to have taken some action?

1 (most likely) - 7 (not likely)

\*\* Since the participants were allowed to check more than one item, the total frequency is greater than the sample size (n = 251).

suggest that there are certain personal traits that influence individuals to take different types of complaint actions when they experience dissatisfying incidents. Day, Grabicke, Schaetzle, and Staubach (1981) proposed that an individual's "propensity of complain" influences a dissatisfied consumer's complaining behavior.

### Vending Machine Company's Responses to Customer Complaints

To find out how vending machine operators responded to the customers' complaints, respondents were asked whether they received a satisfactory remedy from the vending machine service company for their complaint. Among the 99 respondents who had taken a redress seeking complaint action against the company (i.e., those who had checked one of the items under Redress Seeking Actions in Table 4), only 28 people

(22%) indicated that they received a satisfactory remedy. This figure does not compare positively with the previously reported comparable figures. Strauss and Hill (2001) reported that among the consumers who complained through e-mail to the retailers and manufacturers in the U.S., 47 percent received responses and 26 percent received redress. Moore, Maxwell, and Barron (1996) found that 39 percent of consumer complaints received responses and 29 percent received an apology or explanation from the retailers in Britain. This finding explains why the lack of responsiveness to complaints is high on the users' complaint list and underlines the importance of improving the availability of and the handling of refund requests and complaints.

**Improvements Users Suggested.** It would be of great interest for vending machine operators to be aware of the suggestions consumers have for

**Table 5**  
**Suggestions for Improvements\***

SUGGESTED ITEMS	FREQUENCY
1. Offer a wider variety of items.	53
2. Offer more healthy and nutritious items.	42
3. Improve refund and complaint processes.	35
4. Reduce prices.	22
5. Improve the mechanical functioning of the machines.	19
6. Increase the number of vending machines and available locations.	14
7. Improve attendant services.	13
8. Improve maintenance of machines.	11
9. Improve the quality and freshness of items carried.	10
10. Improve the convenience of vending machine locations.	8
11. Introduce new technology to vending machines.	6
12. Others	6

\* Some respondents listed more than one suggestion, each of which was counted as a separate item.

improving vending machine services. They were asked: "what kinds of improvements on vending machines would you like to suggest to the vending machine service company to serve you better?" The respondents offered many useful, legitimate, and interesting suggestions. A number of wide ranging suggestions are grouped into ten categories based on the contents of the comments. These categories and their frequencies are presented in Table 5. Although respondents mentioned all five types of the dissatisfying experiences discussed previously, the scope of their suggestions is much broader and reveals many areas that do indeed need attention of vending machine operators. Topping the list is the respondents' desire for a wider variety of food and beverage products carried in vending machines. Next is their desire for healthier and more nutritious items available. Improvements in refund request and complaint filing is the third item. This particular problem, which received the worst evaluation in the survey, has consistently been identified as the most serious drawback of vending machine services in this study. Respondents also suggested that the prices of

products sold in vending machines be reduced. As indicated, prices received the second lowest evaluation. Consumers would also like to have more vending machines available, as well as an improved level of service and maintenance. Other suggestions include higher product quality, more convenient locations, and enhancement of technology.

## DISCUSSION

Despite the ever-increasing presence and pervasiveness of vending machines in consumers' lives, there have been no studies in marketing and consumer behavior literature that have investigated consumers' consumption experiences with vending machines. This study reported the first empirical findings on consumers' usage behavior, opinions, attitudes, satisfaction, dissatisfaction, and complaint behavior regarding the services rendered by food and beverage vending machines.

The results show that the consumers' involvement level with vending machines is higher than with many products that have long

been a part of consumers' daily lives at home such as TV, coffee, laundry detergent, and red wine. Consumers recognize vending machines as quite useful, beneficial, and important. Their frequent use of a variety of food and beverage products in vending machines, indicates the value of vending machines in their lives. These findings testify that the vending machine has actually become one of the most important non-store marketing channels as Quelch and Takeuchi (1981) predicted more than two decades ago. The vending machine industry should develop strategies to preserve and solidify these invaluable assets, the high consumer involvement and patronage. At the same time, the industry needs to look at those problem areas exposed in this study and incorporate consumers' suggestions for improvements, for its continued growth and expansion.

Compared with the high consumer involvement and patronage, vending machine services received only tepid evaluations in many areas. While consumers' evaluations were positive in location convenience, cleanness of vending machine sites, and freshness of items bought, their opinions about many other aspects were not as positive. Consumers were highly critical of the refunding request and complaint filing procedures, product prices, and machine functional problems. Satisfaction and dissatisfaction data reveal that consumers are not sufficiently satisfied with their vending machine experiences. This finding should be taken as a serious warning sign that the food and beverage vending business owners must improve their operation and services. Consumers' unfavorable comparison of their vending machine experiences to their shopping experiences at retail stores combined with their dissatisfying experiences confirm the seriousness of these lukewarm consumer evaluations and lower satisfaction level. Only about 11 percent of consumers consider vending machine shopping to be more satisfying than their comparable store experience. Vending machine operators must enhance the consumer's desire for shopping with vending machines by addressing the problems identified in the study.

The three areas in which consumers were most greatly dissatisfied as revealed in this study are all

intertwined. Machine malfunctions result in the loss of money; users are frustrated with the inadequate system of requesting refunds and filing complaints; and those who do ask for a refund or complain either do not receive a satisfactory remedy from vending machine operators or get no response to their complaint all together. One of the clearest findings that emerged from this study is that consumers become very frustrated and angry when there is a lack of or no existence of a system at vending machine locations that would allow them to solve these problems. This appears to be a continuing source of frustration, anger, and dissatisfaction.

The weakest part of vending machine transactions is that the machine alone handles all aspects of a transaction with no human contact or interaction. Most of the consumer dissatisfactions and complaints identified in this study probably would have never occurred or might have been easily resolved if a service person was at hand. However, this no-human contact is the very essence of the vending machine business and cannot be corrected. Although the level of service or communication at vending machine sites will not match the face-to face interactions in stores, proper accommodations at vending machine sites can significantly mitigate these problems. Providing refund request cards or envelopes in which the user is allowed to briefly describe the nature of the incident/complaint, the amount of money lost, and the mailing/contact address, or merely posting a 1-800 phone number(s) to call would be sufficient in addressing most of the consumers' problems. However, it is very surprising to discover that these relatively simple procedures are not in place at so many vending machine sites. The results of this study have confirmed the previous findings that a lack of proper procedures contributes to dissatisfaction and negative word of mouth (Blodgett, Granbois, and Walters 1993, Tax, Brown, and Murali 1998). It is important to note that when consumers have no recourse or venue for complaining or remedying their problems, their intensely negative emotions of frustration and anger would lead some consumers to engage in retaliatory actions including vandalism (Huefner and Hunt 2000).

Vandalism has actually been one of the vending machine industry's most prevalent problems and is a chronic source of economic damage to vending machine operators (Fitzell 1991, Sfiligoj 1994). In conclusion, the provision of complaining procedures and a refunding system at vending machine sites should be one of the most immediate areas of improvement from both managerial and economic perspectives. It is also important for vending machine operators to be far more responsive to consumer complaints to enhance the consumers' perception of procedural justice. It is unsettling that among those who took a formal complaint action, only 22% reported that they received a satisfactory remedy by the vending machine service company.

The present study identified various forms of complaining actions that vending machine users take. Most of them are private forms of complaining actions along with mild forms of public complaining actions, including negative word of mouth. Although a relatively small proportion of users (16%) took formal complaint actions, this proportion is much higher than the complaint ratio of about 10% reported by Technical Assistance Research Programs (1986). This is a clear indication that users are highly involved with vending machines and that the level of user dissatisfaction with vending machines is high.

Although the present study is primarily descriptive, intriguing findings regarding consumer involvement warrant more careful investigations about its role in consumer satisfaction and dissatisfaction in service marketing settings. It was found that the more the consumers are involved with vending machines, the more dissatisfied they are with vending machine services, and the more negatively they rate their experiences with vending machine shopping in comparison to similar retail store shopping experiences. It is postulated that when the level of vending machine service is low as found in this study, highly involved consumers who use vending machines more will be more sensitive to dissatisfying experiences than low involvement consumers. By the same logic, when the level of service quality is high, highly involved

consumers are more likely to experience a higher level of satisfaction than less involved consumers. Empirically testing these propositions will offer new insight into the relationship between satisfaction/dissatisfaction and involvement in services marketing. Celuch and Taylor (1999) have suggested that involvement research holds the potential for increasing our understanding of customer-service relationships, as well as offering insights to service marketing practitioners.

Although this research is the first empirical study that has shed light on consumer behavior with vending machine services, the study has some limitations. This study is based on a sample from a single academic community. Although academic and office locations account for about 37 percent of food and beverage vending machines, there are other important venues such as manufacturing and warehouse facilities (35 percent) and retailing sites (12%) (National Automatic Merchandising Association 2002). More empirical studies with such vending machine venues need to be conducted to discover similarities and differences among them. That will help us get a more comprehensive view of consumer behavior and experiences with vending machine use. Since the present study only dealt with the food and beverage vending machine, consumer experience with other types of vending machines (cigarettes, music CDs, and sundries/toiletries, whose shares in the vending machine business are growing) needs to be investigated in future research.

Despite these limitations, the present study makes contributions to non-store marketing and consumer behavior literature by shedding light on various aspects of consumer behavior with food and beverage vending machines, including satisfaction, dissatisfaction, and complaining behavior.

## REFERENCES

- Almanac of Business and Industrial Financial Ratios* (2001-2003), 32<sup>nd</sup> Annual Edition, Prentice Hall, Paramus, NJ.
- Beverage World (1992), "Right here, right now," February, 52-58.
- Blodgett, Jeffrey G. and Donald H. Grandbois (1992), "Toward an Integrated Conceptual Model of Consumer

- Complaining Behavior," *Journal of Consumer Satisfaction, Dissatisfaction And Complaining Behavior*, 5, 93-103.
- Blodgett, Jeffrey G., Donald H. Grandbois, and Rockney G. Walters (1993), "The Effects of Perceived Justice on Negative Word-of-Mouth and Repatronage Intentions," *Journal of Retailing*, (Winter), 69, 399-428.
- Celuch, Kevin and Steven A. Taylor (1999), "Involvement With Services: an Empirical Replication And Extension of Zaichkowsky's Personal Involvement Inventory," *Journal of Consumer Satisfaction, Dissatisfaction And Complaining Behavior*, 12, 109-122.
- Churchill, Gilbert A., Jr., and J. Paul Peter (1984), "Research Design Effects on the Reliability of Rating Scales: A Meta-Analysis," *Journal of Marketing Research*, 21, 360-375.
- Day, Ralph L., Klaus Grabicke, Thomas Schaetzle and Fritz Staubach (1981), "The Hidden Agenda of Consumer Complaining," *Journal of Retailing*, 57, (Fall), 86-106.
- Fitzell, Phil (1991), "Vending the Future," *Beverage World*, February, 52-57.
- Huefner, Jonathan C. and Keith Hunt (2000), "Consumer Retaliation as a Response to Dissatisfaction," *Journal of Consumer Satisfaction, Dissatisfaction And Complaining Behavior*, 13, 61-82.
- Jones, Thomas O. and W. Earl Sasser, Jr. (1995), "Why Satisfied Consumers Defect," *Harvard Business Review*, November-December, 88-99.
- Kotler, Philip (2003), *Marketing Management*, 11<sup>th</sup> edition, Prentice Hall, Upper Saddle River, NJ.
- Lamb, Charles W., Joseph F. Hair and Carl McDaniel (2002), *Marketing*, 6<sup>th</sup> edition, South-Western Publishing.
- Lee, Dong Hwan and Orose Leelakulthanit (1994), "Predicting Consumer Complaint Behaviors with Food Service: An Empirical Test of Two Alternative Models," *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, 7, 191-197.
- Lee, Dong Hwan and Richard W. Olshavsky (1995), "Conditions and Consequences of Spontaneous Inference Generation: A Concurrent Protocol Approach," *Organizational Behavior and Human Decision Processes*, 61, (2), 177-189.
- Leisure Week (1999), "Reports Shows Growth in Vending Machines," April 23, 13.
- Leaner, Neal (2002), "Vending Machines that Match the Minimart," *Christian Science Monitor*, November 4.
- Lichtenstein, D. R., P. H. Block and W. C. Black (1988), "Correlation of Price Acceptability," *Journal of Consumer Research*, 15, (September), 243-252.
- Lord, Fredrick M. and Melvin R. Novick, (1968), *Statistical Theories of Mental test Scores*, Reading, MA: Addison-Wesley.
- Moore, Christopher M. J., Gillian A. Maxwell and Paul E. Barron (1996), "U.K. Retail Consumers - Are They Being Served?," *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, 9, 229-239.
- Munson, J. M. and E. F. McQuarrie (1987), "The Factorial and Predictive Validities of a Revised Measure of Zaichkowsky's Personal Involvement Inventory," *Educational and Psychological Measurement*, 47, 773-782.
- National Automatic Merchandising Association (2002), *Automatic Merchandiser 2002 State of the Vending Industry Report*.
- National Automatic Merchandising Association (2003), *2003 Operating Ratio Report*.
- Oliver, Richard L. and William O. Bearden (1983), "The Role of Involvement in Satisfaction Processes," in R. P. Bagozzi and A. M. Tybout, Eds., *Advances in Consumer Research*, 10, 250-255, Ann Arbor, MI: Association for Consumer Research.
- Peter, J. Paul and James H. Donnelly (2003), *Marketing Management*, 7<sup>th</sup> edition, McGraw-Hill/Irwin, New York, NY.
- Phillips, Kent (1992), "Critical Vending," *Beverage World*, 111, February, 99.
- Quelch, John A. and Hiroataka Takeuchi (1981), "Nonstore Marketing: Fast Track or Slow?," *Harvard Business Review*, July-August, 75-84.
- Sfiligoj, Eric (1994), "Defending Vending," *Beverage World*, January, 113, 51.
- Stafford, M. R. and E. Day (1995), "Measuring Service Involvement: a Preliminary Assessment," in *American Marketing Association Educator's Proceedings*, 6, 75-80.
- Strauss, Judy and Donna J. Hill (2001), "Consumer complaints by E-mail: An Exploratory Investigation of Corporate Responses and Consumer Reactions," *Journal of Interactive Marketing*, 15, (1), 63-73.
- Tax, Stephen S., Stephen W. Brown and Murali Chandrashekar (1998), "Customer Evaluations of Service Complaint Experiences: Implications for Relationship Marketing," *Journal of Marketing*, April, 62, 60-76.
- Technical Assistance Research Programs (1986), "Consumer Complaint Handling in America: Summary of Findings and Recommendations, Washington D.C.
- Trachtenberg, Jeffery A. (1994), "Interactive Kiosks May Be High-Tech, But They Underwhelm U.S. Consumers," *Wall Street Journal*, March 14.
- Vending Times (2002), *Census of the Industry 2002*, <http://vendingtimes.com>.
- Zaichkowsky, Judith L. (1985), "Measuring the Involvement Construct," *Journal of Consumer Research*, 12, (December), 341-352.
- Zaichkowsky, Judith L. (1994), "The Personal Involvement Inventory: Reduction, Revision, and Application to Advertising," *Journal of Advertising*, 23, (4), 59-70.

#### ACKNOWLEDGMENTS

The author gratefully acknowledges the assistance of Michael Lachmann in data collection and coding. The author thanks Jackie Clark at National Automatic Merchandising



Association for useful information about the vending machine industry.

**Send correspondence regarding this article to:**

Dong Hwan Lee  
 School of Business  
 Manhattan College  
 Riverdale, NY 10471 U.S.A.  
 fax: 718-862-8032  
 email: dongh.lee@manhattan.edu

---

**Appendix A  
 Cover Letter and Instructions**

---

A SURVEY  
 ON  
 THE EXPERIENCE WITH FOOD AND BEVERAGE VENDING MACHINES

Dear Participant:

The marketing research team in the School of Business is conducting a consumer satisfaction study. Please take a few moments to complete the attached survey. The study is about your experiences with food and beverage vending machines, including the ones around campus. The result of this study will be made available to the company that operates vending machines on campus. Thus, your participation in the survey is very important in improving the vending machine service around campus. Please be assured that your responses will be confidential and anonymous. If you have any questions about the study, call Professor Dong H. Lee, School of Business, at xxx-xxxx. Thank you very much for assisting us in this study.

\*\*\*\*\*

P.S.: Please return your completed survey by Campus Mail. Fold the survey in half and staple it. The return address is already printed on the lower part of this page. We would appreciate your returning the survey as soon as possible - hopefully within 5 days.

---

**Appendix C  
 Factor Analysis of Four Involvement Items**

---

<u>Variables</u>	<u>Factor Loading</u>	<u>Communality</u>
Useful	.718	.515
Important	.873	.762
Beneficial	.868	.753
Means to me	.871	.758

Eigenvalue (Sum of Square): 2.79

Percent of Variance: 69.72

Unrotated one factor was extracted by principal component analysis.

---

**Appendix B**  
**Questionnaire\***

Please circle the number on the scale below that best indicates your feelings.

In general, I consider the food and beverage vending machine:

- |                     |   |   |   |   |   |   |   |                   |
|---------------------|---|---|---|---|---|---|---|-------------------|
| Useless             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Useful            |
| Unimportant         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Important         |
| Not Beneficial      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Beneficial        |
| Means nothing to me | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Means a lot to me |

Approximately, how many times do you use vending machines during a full week: *on campus and off campus?* \_\_\_\_\_ time(s) (e.g., 0, 1, 2, 3, .....)

- |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|

Please rank these product types according to how often you buy from vending machines. Put a 1 next to the one you buy most often, a 2 for the second most often, and so forth.

- |                      |   |                           |                  |
|----------------------|---|---------------------------|------------------|
| ___ Bottled beverage | ___ Fruits (e.g., apple)                                | ___ Milk                  | ___ Health foods |
| ___ Canned beverage  | ___ Snacks (e.g., cookies, chips, candy bars, popcorns) |                           |                  |
| ___ Hot drinks       | ___ Frozen foods (meals)                                | ___ Other; Specify: _____ |                  |

How would you evaluate the vending machines *operations* on campus? (food and beverage)

- |             |   |   |   |   |   |   |   |           |
|-------------|---|---|---|---|---|---|---|-----------|
| Unfavorable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Favorable |
| Negative    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Positive  |

Below is a set of statements about the vending machines service on campus. Please circle the number from the scale that indicates your opinion most accurately.

1. The vending machines are \_\_\_\_\_ located.  

Conveniently	1	2	3	4	5	6	7	Inconveniently
--------------	---	---	---	---	---	---	---	----------------
2. The areas in which vending machines are located are \_\_\_\_\_.  

Clean	1	2	3	4	5	6	7	Dirty
-------	---	---	---	---	---	---	---	-------
3. The prices of products in the vending machine are \_\_\_\_\_.  

Expensive	1	2	3	4	5	6	7	Inexpensive
-----------	---	---	---	---	---	---	---	-------------
4. The range of product types (see question B) available in the machines is \_\_\_\_\_.  

Wide	1	2	3	4	5	6	7	Narrow
------	---	---	---	---	---	---	---	--------
5. In general, the variety of available choices for each product type in the machines is \_\_\_\_\_.  
(e.g.: brands, flavors, low fat vs. regular, low sugar, low calorie, chicken burrito vs. hamburger)  

Excellent	1	2	3	4	5	6	7	Poor
-----------	---	---	---	---	---	---	---	------
6. Products dispensed from the machines are \_\_\_\_\_.  

Stale	1	2	3	4	5	6	7	Fresh
-------	---	---	---	---	---	---	---	-------

**Appendix B (cont.)  
Questionnaire**

---

7. The vending machines \_\_\_\_\_ function properly.  
Always 1 2 3 4 5 6 7 Never
8. The bill changing machines \_\_\_\_\_ function properly.  
Always 1 2 3 4 5 6 7 Never
9. The vending machines \_\_\_\_\_ require exact change.  
Always 1 2 3 4 5 6 7 Never
10. The nutritional information on the items in the vending machine is \_\_\_\_\_ to read.  
Difficult 1 2 3 4 5 6 7 Easy
11. Security in the areas where vending machines are located is \_\_\_\_\_.  
Poor 1 2 3 4 5 6 7 Excellent
12. The available means in which you can file a complaint are \_\_\_\_\_.  
Unsatisfactory 1 2 3 4 5 6 7 Satisfactory

Overall, how satisfied or dissatisfied have you been with your experiences using the vending machines on campus?

Highly Dissatisfied 1 2 3 4 5 6 7 Highly Satisfied

How satisfied or dissatisfied have you been with your experiences using vending machines in general: on campus and off campus?

Highly Dissatisfied 1 2 3 4 5 6 7 Highly Satisfied

How would you compare the above feeling with your equivalent shopping experiences at regular retail stores?

much worse    somewhat worse    slightly worse    about the same    slightly better    somewhat better    much better

What kinds of improvements on vending machines would you like to suggest to the vending machine service company to serve you better? List suggestions if you have any.

Think about an occasion in which you had a negative experience with a vending machine whether it was an on-campus or off-campus incident.

1. Please describe the situation very briefly.

*This happened \_\_\_\_\_ on-campus; \_\_\_\_\_ off-campus in \_\_\_\_\_ (year).*

2. How did you feel when you were faced with the situation just described? Circle the number that best indicates your feelings.

Very Frustrated 1 2 3 4 5 6 7 Not at all Frustrated

---

**Appendix B (cont.)  
Questionnaire**

- Very Angry 1 2 3 4 5 6 7 Not at all Angry
3. If you had the same kind of experience at a regular retail store, were you likely or unlikely to have taken some action? (e.g., ask for a refund, ask for a replacement, complain to the service clerk)
- Most Likely 1 2 3 4 5 6 7 Not Likely
4. What action did you actually take regarding the problem with the vending machine you described? You can check more than one item if appropriate.
- (1)  Did nothing
- (2)  Pounded or banged the machine out of frustration or anger
- (3)  Talked to people about the incident and/or warned them of it
- (4)  Stopped using the vending machine that cause the trouble
- (5)  Posted a note on the machine warning others
- (6)  Talked to available personnel on site or nearby office
- (7)  Filled out and mailed a Refund Request Form
- (8)  Called the company to complain
- (9)  Other: *Please describe.* \_\_\_\_\_
5. If you checked item (7) or (8) (if you did not, skip this question), did you get a satisfactory remedy?  Yes  No

The information you provide here will help us to understand the results of this study better. Please be assured that your responses are anonymous and confidential.

Status:  Freshman  Junior  Graduate  Staff  
 Sophomore  Senior  Faculty  Other

Residence:  On Campus  Off Campus

Sex:  Male  Female

Marital Status:  Single  Married  Other

Age: \_\_\_\_\_

Thank you very much for your participation.

\* The original survey included a number of other questions that are not presented here because they were not relevant to the present study. However, the sequence of questions presented here is the same as in the original questionnaire.