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# Gathering Information Based on Focus Groups: Consumer's Involvement in the Use of Vending Machines

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### Abstract

The purpose of the present study is to describe the use of two focus groups to identify and refine a set of questionnaire items. They were also used to provide descriptions of lived experiences and to realize the importance, or not, of the use of Vending Machines in the university context. Vending Machines consumer students from different areas of knowledge participated on a voluntary basis (economics and management areas define the first group, and engineering and marketing the second group). Based on the data collection and analysis it was possible to identify the attributes of vending machines that are important on both marketing and operations management in the performance of this type of machines. The participants, despite having lived bad experiences, consider their involvement useful, important, advantageous, necessary and interesting. Performance, efficiency, level of service, flexibility and availability for the needs of consumers were also identified.

### Keywords

Focus Group, Vending Machines, Qualitative Analysis, Consumer Involvement

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## Gathering Information Based on Focus Groups: Consumer's Involvement in the Use of Vending Machines

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The vending business has progressed over the years. This business involves the vending machines (VM), vending service providers or operator vending, customers (companies or institutions where the VM are placed and active) and the final consumer. The Operations Management should ensure that customer's request is answered at the right time with the wanted levels of quality of service/product. The coordination, such as planning or organizing (e.g. the costs/materials control or human resources involved) exerts influence on decision-making and consequently the success of the business. The Marketing dimension, in all stages of this type of business, is a vehicle that forwards the satisfaction of the customer without gaps. In fact, some elements of strategic marketing, such as price, image, advertising and/or promotion distribution channel and resources, are interconnected with the entire process and influence directly or indirectly the customer's behaviour.

With the overall objective to explore the Operations Management, in particular the supply-chain management, of VM planning and vending services planning, the satisfaction of its customers and consumers was firstly understood in this context. In order to achieve this, two focus groups were used for data collection, at a University in Northern Portugal. Participants in the case study were VM users/consumers, undergraduate students invited to take part in the study. The data collected is important since it encompasses the business-vending stakeholders: vending operators that work at the university, the university institution itself as a client and the university students as consumers. This paper will explore and analyse the qualitative data from two focus groups with the consumers (VM consumers, undergraduate students), in order to provide some insights and perceptions on the consumer's involvement in

the use of VM and to identify and refine the items to be used in a behavioural questionnaire to be applied to the regular consumers, university students.

Several studies in an educational context can be found in the literature. However, they do not explore what is behind a VM. Price (2012), according to his research, found that there are many studies concerned with the effects of the consumption of beverages (juices) and physical health of adolescents (obesity). The author observed that an association between the juice consumption and the students' behaviour (e.g., students that consume more than three juices) developed inappropriate daily behaviours. So, it is clear that there is a need to investigate possible causes of events in this relationship, due to policy changes such as prohibiting the sale of some juices in VM in some schools, and in contrast, allowing the existence of these products in the VM in other educational institutions. Curiously, and according to the results of this study, in educational institutions where the VM do not sell drinks, students between pauses arrive less often late in comparison with schools where VM sell drinks (Price, 2012).

Michal, Keusch, and Kmec (2009), in a more technical work, explain that the majority of failures are due to the incorrect handling of VM by some consumers, for example, who insert other objects in the coin acceptor slot. The authors also stated that it is important that possible failures should be offset before they become failures by vending operators.

The study by Lee (2003) is based on the behaviour in terms of consumer purchasing attitudes and opinions about the VM at a University in the north-eastern United States. Satisfaction, dissatisfaction and complaints were also investigated. Based on the opinions of 251 consumers, the author concluded that these types of machines are considered useful, beneficial and significant, in a very positive location, cleanliness and freshness of the products. However, concerning VM services provided, consumers rated them as regular. They also reported that the delivery system and handling of complaints are inadequate, which promotes dissatisfaction. They also addressed the prices of products and VM functional problems negatively, such as loss of money. The present study follows in part this study. This paper, following this introduction, starts with a brief review of the literature on the topics to be discussed (Focus group and case-study description), followed by the presentation of the methodology used in this study, the data collection and analysis and, finally, their discussion and conclusions.

### **Focus Group**

Focus group is one of the most important qualitative research techniques and has a long history in several areas, from marketing through to educational, health, engineering and others (Cyr, 2015; Breen, 2006; Lee, 2003; Rabiee, 2004). Historically, the use of focus group dates back to the 1920's. This methodology was employed during World War II, and although its uses, criteria and procedures were published in 1956 (Merton, Fiske, & Kendall, 1956), it wasn't until later, in the early 1980's, that it started being used in academic research to understand attitudes and behaviours, and in applied work (Suter, 2000).

A focus group can be defined as

a discussion conducted by a trained moderator in a non-structured and natural manner with a small group of respondents. A moderator leads and develops the discussion. The main purpose of focus group is to gain insights by creating a forum where respondents feel sufficiently relaxed and to portray their feelings and behavior, at their pace and using their language and logic. (Malhotra & Birks, 2006, p. 160)

So, and as stated by Suter (2000), this methodology encompasses other qualitative methods, participant observation and in-depth interviewing. However, not in a thorough way, it gathers information through active participation in the environment that is under study and by means of individual interviews. Not going in-depth, focus groups can also be used to improve information already known, that is, analysing information from different points of view, in a suitable and cost efficient way (Nassar-McMillian & Borders, 2002). As stated by Liamputtong (2011), focus group results can provide a more holistic understanding of a specific topic. Another feature on using focus groups as a qualitative technique, is to help in the development of quantitative instruments, e.g. a questionnaire, allowing an efficient identification, generation and refinement of items (Nassar-McMillian & Borders, 2002).

Typically, a focus group is normally composed of 6 to 12 elements/participants (Liamputtong, 2011; Malhotra & Birks, 2006); below 6 it cannot generate the required group dynamics, and in large groups (more than 12 elements) it can be difficult to keep discussions focused and with a tendency for subdivision into smaller groups, creating possible competition between them in order to enforce their perspectives, which is not the main objective of a focus group. More than one focus group can also be used to reinforce content validity, creating an environment where different points of view are discussed (Rio-Roberts, 2011). Knowing this, the role of the focus group facilitator is crucial. The facilitator who empathizes with all group participants promotes responses and encourages discussion.

### **Focus Group: Case-Study Description**

The first VM successfully commercialized was the one developed by Thomas Adams to sell Tutti Frutti gums in the New York metro at the end of the 19th century. In the beginning of the 20th century, the Horn & Hardart Baking Company, Philadelphia, became the first VM manufacturer. Machine Vending, by definition, is “the retail sale of goods or services through coin- or currency-operated machines activated by the ultimate consumer-buyer” (AMA, 2015, n.p.).

According to the European Vending Association, EVA (2014), some of the benefits associated with VM are: convenience and accessibility (24/7), versatility, hygienic and safety to deliver quality food and drinks and provide an environment for social encounter. In Europe, more than 295 million VM consumers use these machines at least once a week.

Nowadays, VM are available in any company (manufacture or service) or institution, and according to Manrique and Manrique (2011), this type of machine and vending services not only cover the initial concept of guidance for the consumer but also became a useful and important resource for the purposes established. The internal mechanisms of the VM follow the technological evolution to become more and more sophisticated, forcing the operators and the vending business to have a better understanding and knowledge of those machines. VM are more flexible, modular and smaller. Similarly, stock management, for example, can be performed without requiring the distributor to be on the spot, and reports can be analysed whenever requested at any moment, all due to embedded software. It is clear that vending services have developed resources, logistics and management methods to support every part of VM operations. Additionally, Marketing Departments and Top Management must support competitiveness in this type of distribution channel (Quesada et al., 2008). If the VM functions well and with an excellent sale service, including installation, refeeding, maintenance and repair, staff training and/or existence of effective handling instructions, customer needs satisfaction will be achieved, regardless of the market in question (Goffin, 2000).

Customer attitudes and opinions play an important role in the service competition and in the understanding of the communication between the company and the customer (Gronroos, 2007), and marketing managers should make decisions as a reaction to new market challenges.

Weele (2010) refers that, in the retail model, the supply chain is the way to success. A usual practice in this type of vending business is to control the feeding of the machine (stocks and sales control) and the waiting time until the next customer visit (Ketzenberg et al., 2011). When the supplier visits the VM without any information about stocks and machine needs, he/she may face out-of-stocks problems (Rusdiansyah & Tsao, 2005). Currently, the technology allows remote access to the data and to the VM inventory at any time (Ketzenberg et al., 2011). The technology can improve the supply chain of this kind of business and save operating costs. Consequently, the level of customer service increases in terms of confidence and the operator can anticipate future needs (Rusdiansyah & Tsao, 2005). In addition, the market and competitive company priorities generate dimensions of success in the supply chain such as price, distribution, customer service, quality and flexibility (Quesada et al., 2008).

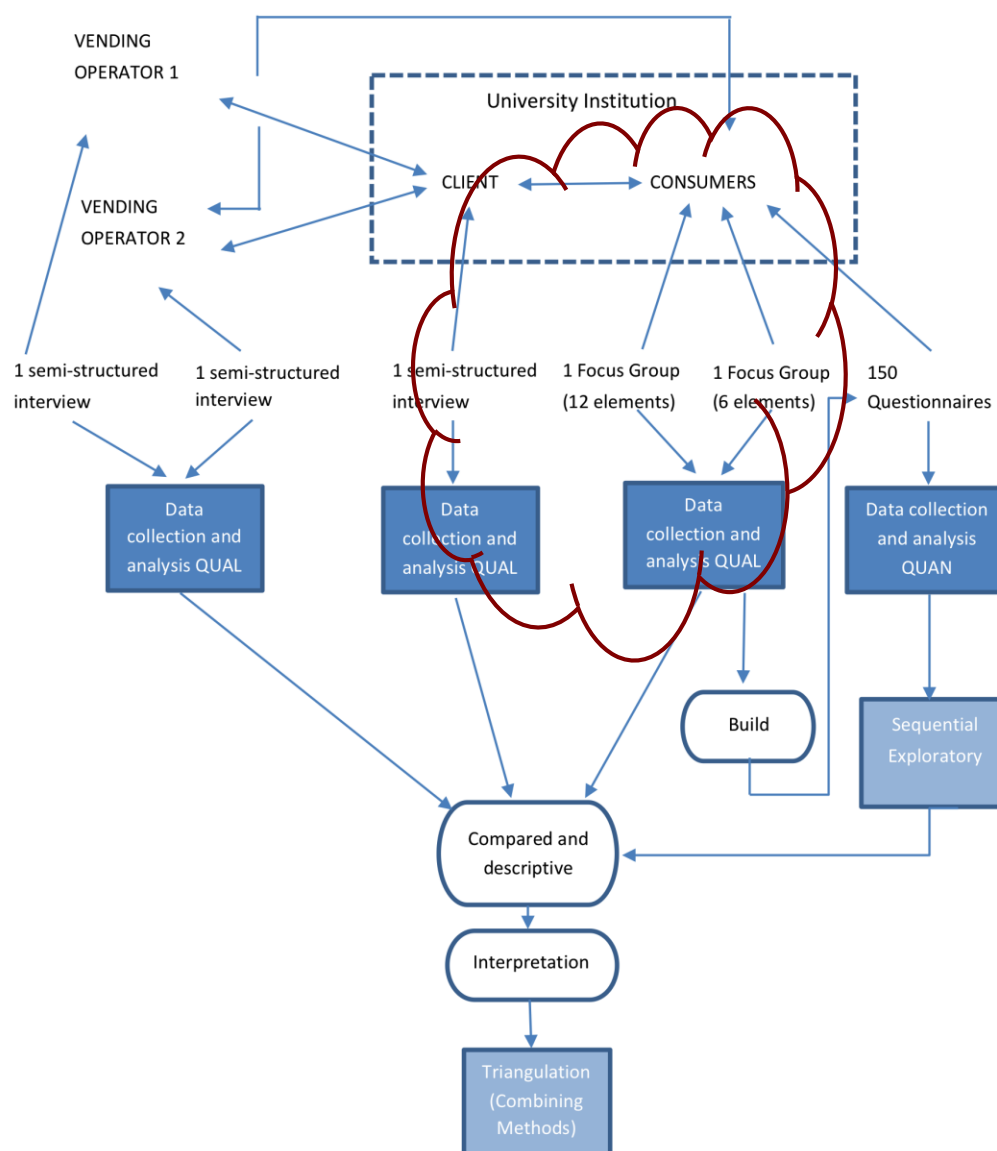
Lee (2003) proposes the use of the term “involvement” because it is one of the most important constructs that validate the consumer experience. This construct has been used in the marketing services context. According to Celuch and Taylor (1999), the involvement construct is commonly cited in literature concerning Marketing, it being associated to customer satisfaction and consumer behaviour when he/she complains. Following this line of thought, Zaichkowsky (1985) developed a set of 20 items designated Personal Involvement Inventory (PII) to measure the degree of involvement. PII can be used with relative confidence and reliability in the affective (exciting, attractive, fascinating) and cognitive (required, important, relevant, meaningful, valuable) dimensions in the services context.

Through the client/consumer satisfaction degree, it is possible to obtain an interrelation between consequent behaviours, as the intention to make a new purchase, positive word-of-mouth communication, or even loyalty. If the product/service exceeds the expectation, the client or consumer is satisfied. If the expectation is not met, the client or consumer is unsatisfied. The feeling of satisfaction is closely associated with the affective state (Mousa & Zoubi, 2011). Entrepreneurs use the quality of service and customer satisfaction, knowing that the quality of service performance leads to customer satisfaction (Asthana, 2013).

The present work fits into this context and, as stated above, it is based on a case study conducted at a Portuguese university (place where the VM were located), taken as the client. The sample was non-random, it being a rational choice, allowing to achieve the results more quickly and identify and select specific features to be analysed in subsequent studies. The study was carried out from May to June 2014, and the first contact was made by electronic mail message to the central services of the university asking for a meeting to give an explanation of the purpose of this study. The following section presents more detailed information on how the present study was conducted.

## **Materials and Methods**

The main study is centred on a Higher Education Institution, which can be considered as a client and customer, the students as final consumers and the vending operators who have worked or are still working with the University Institution as suppliers (Figure 1).



**Figure 1.** Research design (adapted from Fernandes, 2015).

For each stakeholder, different methodologies in collecting data were identified and applied: semi-structured interviews to the two vending operators (one still operates and the other has operated at the University), and to the client University through their representative. For the consumers, two focus groups were defined and, by a sequential procedure (qualitative -> quantitative), a questionnaire was developed. The questionnaire, to be applied to a wider sample of the target audience under study (students at a university institution in Northern Portugal), would allow inferring regarding the students' opinions about the quality of the service.

In order to meet the objective of this text, only the procedure used for the focus groups and corresponding data analysis are described, emphasizing the importance of the results obtained in the identification of consumers' involvement. However, it is the authors' purpose to use all collected data (qualitative and quantitative) to individually analyse data and triangulate it in order to complement data, reinforcing results and contribute to the development of knowledge and exposing possible different perspectives (Creswell & Plano-Clark, 2011; Malhotra & Birks, 2006) to be developed. The main purpose is to answer the research question

(RQ): “What is the involvement of the consumers in the use of vending machines?” By answering this RQ it is also possible to identify the attributes of the vending machines, from the point of view of the consumers (students).

### **Description of the Focus Group**

The data collection process consists of respecting some key elements like sampling, obtaining necessary permissions, the type of information to be collected through appropriate tools, data recording and how the data are managed (Creswell & Plano-Clark, 2011). Focus groups can also be used as a complement in quantitative studies, allowing the development or adaptation of existing instruments, as well as, by using more than one focus group, to compare group members’ reactions to the same issue (Nassar-McMillan & Borders, 2002).

To ensure diversity of opinion and convergence to the focus group research questions (detailed in the following section), two focus groups were defined with the VM consumers’, the students. One focus group with students from economics and management areas, and the second one with students from technological (engineering) and marketing were selected. This not only would provide some insights and perceptions on the consumer’s involvement in the use of the VM, but also as way to obtain information to develop a questionnaire to be applied later to a wider group of consumers.

The existence of a pilot focus group has enabled to test the open question of the guide/script or sub-issue being faced with the profile of the group members and the type of answers, which may be essential or not for the study. The first focus group (pilot group) comprised 12 students: 6 from the 3<sup>rd</sup> year in marketing and 6 from the 1<sup>st</sup> year in economics and management, all vending machines consumers. The second focus group comprised 6 students: 3 from the 2<sup>nd</sup> year in technology and 3 from the 2<sup>nd</sup> year in marketing, also all vending machines consumers. The mean age of the students was 26 years (range=18-51 years) and 22% of them were female.

In the recruitment of participants, first the director of the academic services of the university was contacted and an authorization was requested for the application of the methodology. The students were then selected at the end of a class of the lecturer in two different days (one day for each defined focus group). The researcher, after introducing herself to the group, made a brief summary highlighting the key issues of the study. Students who identified themselves as regular consumers of products available in the vending machines were asked if they would like to participate in the study. The selected students were the ones who freely responded positively. Once the desired number of elements was reached, a suitable time for the focus group to take place was mutually agreed upon.

According to the methodology followed a guide was formulated (semi structured questioning) to be used in the focus group. Malhotra and Birks (2006) explain that the existence of a guide may support the essential points to focus without interfering in the reasoning or spontaneity of the elements of the group.

The researcher moderated each focus group and each took approximately 20 minutes’ duration. The end coincided with the moment that students started to repeat what they had said and became agitated (later in the day). At the end, the researcher thanked the students for their contribution to the project. Both conversations were recorded with the permission of the students, respecting their anonymity and confidentiality of the data obtained. The audio recordings were transcribed by an official assistant – competent, responsible and experienced –ensuring the confidentiality of data. During the focus group, the researcher also took several notes.



## Focus Group Questions

The existence of a guide/script can support the key topics to focus on without interfering in the students' spontaneity and reasoning. In addition, the focus group script objectives applied by Lee (2003) were also analysed, and after the authorization of the author (via email). The guide/script allowed to know the experience lived by a group of teenagers/young students, users of VM, and also to know what they thought about the existence of this type of machines at a university.

The first focus group was considered a pilot one. However, after analysis and since it was not necessary to correct the script, the obtained data from this focus group was included in the study. The script consisted of three main questions:

- 1) to verify and/or complement the constructs of the variable involvement: What is your opinion concerning the existence of VM at the university? Of these 11 pairs of items, which do you consider most appropriate and meaningful to qualify the use of VM when you make a purchase: unimportant/important; irrelevant/relevant; without meaning/means a lot to me; worthless/valuable; boring/interesting; emotionless/ exciting; unpleasant/attractive; without fascination/fascinating; unnecessary/necessary; useless/useful; profitless/profitable.
- 2) to verify and/or complement the attributes of vending services: price; variety; type of products; brand; quality; location; breakdowns; and machine specific attributes – design, machine handling mode, touch screen, retro space lighted advertising display, retro illuminated space to display information and nutritional content of products, drive and delivery devices, quick response in the transaction, existence of alternative methods of payment, appropriate drink temperature, possibility to customize drink (hot) choosing quantity and sugar portion and other benefits).
- 3) to share, verify and/or complement lived and felt experiences (good or bad) and attitudes towards these experiences.

To get more information, and depending on the situation and students' ideas and shared experiences, complementary and specific questions were asked (Table I).

**TABLE 1.** Complementary Focus Group Questions

Question ID *	Question
Qi.1	When do you use this type of service? Is there any particular moment?
Qi.2	What types of products do you seek? Specify. These products are always available in the VM?
Qi.3	What drives you to the VM?
Q1.4	According to the 11 pairs of items, can you justify or comment the selection made?
Q1.5	From the above-mentioned attributes, which are the most important? Comment on your choices.
Q2.6	In your opinion and according to the factors of a machine specific attribute which would be the most prominent?
Q2.7	In your opinion, would you add other attributes?
Q2.8	Did you notice the advertising existing in the VM? Is there any information with directions on how to handle the VM? Is there any visible information on the VM for possible contact?

Q3.9	Did you ever made complaints? How were they treated?
Q3.10	Have you ever approached the vending operator, that is, the person who supplies the machines, or the technician, who makes their maintenance? What was the reason? Were you received well?
Q3.11	If, at this moment, all vending machines were removed, how would you feel?

\* Qk.j (k=i beginning, 1, 2 and 3 main question identification; j=1,... 11, number of complementary question).

### Data Analysis and Discussion

Data analysis involve distinctive procedures according to the process stages: data reduction from summaries, coding, listing factors perceived as important, grouping data; data correlation and comparison in order to identify information that emerges from the data (Miles & Huberman, 1984; Onwuegbuzie & Teddlie, 2003). Notice that the analysis results achieved from the focus group data were to be later used and tested by a quantitative questionnaire to be filled in by a larger number of students.

According to the focus group questions (presented in the previous section, Table I), the data obtained were analysed, aggregated and tabled by group (Table II). The volunteer undergraduate students feel a need to use the products of VM knowing that the use of this type of machine generates an expectation. On the other hand, the lived experience, i.e., choose the product, place coins and get the product, can be translated, or not, in satisfaction. Satisfaction influences the intention of making new purchases, influencing word-of-mouth communication or even loyalty. All the synthesised and summarised data were then contrasted and compared with the one in Lee's (2003) study (Table III).

**TABLE 2.** Aggregated Data Obtained from the Focus Group Questions by Group

Main Question ID	Group 1	Group 2
constructs of variable involvement	profitless/profitable unimportant/important irrelevant/relevant boring/interesting useless/useful unnecessary/necessary	useless/useful unnecessary/necessary profitless/profitable
Most important attributes of vending services	price quality brand variety type of products location design convenience	price variety type of products brand quality location (oportunity) machine handling mode
sharing lived and felt experiences (good or bad)	-the VM received coins but did not give the selected product; -the food product was dry; -the drop system for cans of carbonated drinks causes shaking; -the VM gave a different product and not the selected one; -the product got stuck although the VM had driven the delivery system of the product	-the machine did not give back change; -the drop system caused damage to the product; -the drop system for cans of carbonated drinks causes shaking; -the VM gave a different product and not the one selected

### Involvement in the Use and Services of a VM

Eleven pairs of items were considered in this study although seven items are considered in Lee (2003). The author found that the most relevant constructs of the variable involvement were four (Table III). In this project and based on Table II, three pairs were identified on both groups, differentiating Lee (2003) in one. Still, the pair “unimportant/important” was identified in one of the focus groups matching Lee’s (2003) study. The pair “boring/interesting” was considered since it was identified more than once. In this involvement, the students stated that they use the VM as a “scratching” situation, an “SOS” or as a “5 minutes” in terms of need/use. Other students mentioned the use of VM since they are present and take the “opportunity” because “it is fast” and “practical” (i.e. “convenient”). Overcoming the absence of the human factor, the machine language could be complemented with human voice recordings like “hello (...) good choice.” All the participants of the focus group shared this idea.

### Attributes of a VM

The “location,” that is, the place “where we (VM) are” is relevant to students following by the “prices charged” because they “should be lower.” For example: “go to a VM and pay a price equal to a coffee (...) without anyone serving (...) should get cheaper.” As to the price/quality binomial, students mentioned that, and especially for hot drinks, “the quality is low,” for price/variety expressing that the VM “always have the same product.” Students also suggested that the VM could be reconfigured to display promotions. For example, “stipulating that on Mondays a specific drink offers something (...) this could make a difference.” Another problem to solve, maybe more related to the surrounding area of the VM: “when we want more than one product from the machine, the first has to be stuck under my arm to get the other (...) it’s complicated (...) and then wait for change coins.”

**TABLE 3.** Aggregated Data Obtained From the Focus Group Questions Contrasted with Lee’s (2003) study

Dimensions	This project	Lee (2003)
Research Design	Sequential explanatory	Exploratory and descriptive
Number of focus groups defined	2	3
Participants	18 (university students from different areas and academic years)	23 (administrative staff, teachers and university students)
Relevant constructs of variable involvement	useless/useful profitless/profitable unimportant/important unnecessary/necessary irrelevant/relevant boring/interesting	useless/useful profitless/profitable unimportant/important without meaning/means a lot to me
Most important attributes of vending services	location price type of products variety quality brand machine handling mode	location price type of products variety quality machine handling mode nutritional information local security
sharing lived and felt experiences (good or bad)	-the VM received coins but did not give the selected product	Open question

	<ul style="list-style-type: none"> <li>-the machine did not give back change</li> <li>-the food product was dry</li> <li>-the drop system caused damage to the product</li> <li>-the drop system for cans of carbonated drinks causes shaking</li> <li>-the VM gave a different product and not the selected one</li> <li>-the product got stuck although the VM had driven the delivery system of the product</li> </ul>	
Attitudes towards bad experiences	<ul style="list-style-type: none"> <li>-I did nothing</li> <li>-Since I was angry, I pushed the machine</li> <li>-I spoke to others telling them about the incident</li> <li>-I haven't used the VM anymore</li> <li>-Posted a warning note on the VM to alert other consumers</li> <li>-I contacted the technical or personnel responsible for the products supply about the occurrence</li> <li>-I wrote a complaint via email</li> <li>-I contacted the vending service company from the contact number available on the VM</li> <li>-I spoke to someone in charge of the university about the event</li> </ul>	<ul style="list-style-type: none"> <li>-I did nothing</li> <li>-Since I was angry, I pushed the machine</li> <li>-I spoke to others telling them about the incident</li> <li>-I did not use that VM anymore</li> <li>-Posted a warning note on the VM to alert other consumers</li> <li>-I contacted the technical or personnel responsible about the occurrence, on site or nearby</li> <li>-I contacted the vending service company complaining</li> </ul>

Regarding the VM handling, some students reported that “sometimes it seems that you need to take a course to understand the machine” or “some difficulties in the most basic thing (...) where to put the coin (...)” They suggested “at least a better identification of the place.” (...) “a tactile screen (...) with advertising (...) is not important (...) but if it was used to have the handling mode (...) it would be practical.”

### Questionnaire Development

The identification of constructs and attributes obtained with the use of focus groups (Fernandes et al., 2015) were an important topic in the development of the questionnaire to be applied to a higher group of students/consumers. The relevant constructs were: useless/useful, unimportant/important not necessary/necessary, not beneficial/beneficial and boring/interesting. Regarding the main attributes, location, price, type, variety, quality, brand of products and machine handling mode, were identified. These were the items considered in the questionnaire bidding to understand the behaviour of regular consumers, and others, both belonging to the same university. Frequency of use, selection of products/brands and VM, reasons for use, degree of satisfaction of vending service, most frequent complaints, attitudes

and ways of resolution obtained, and some relevant attributes to add (from the user's perspective) to the VM where also considered.

According to Fortin (2009), during the development of a questionnaire several steps must be taken into account, namely determining the data to be obtained according to the purpose of the study and the research question(s); establish a database of questions from other studies or from the literature; formulate open and/or closed, clear, concise and understandable questions; order the questions by themes and from the general to the particular; submit a first version (draft) of the questionnaire to be reviewed by experts; pre-test the questionnaire by using a small sample (10 to 20 persons) of the target population allowing to discover inaccuracies and; writing an introduction with the study objectives and guidelines on how to answer the different types of questions. Following these steps, the applied questionnaire was developed taking into account three aspects: (1) the results obtained from the focus group (Fernandes, 2015; Fernandes et al., 2015), (2) Lee's (2003) questionnaire (used with the permission of the author), and (3) literature review. Fortin (2009) states that "when using an existing questionnaire, it is often necessary to join or delete some issues to remain faithful to the objectives [...] [of] research." Knowing this, a similar procedure was applied in the development of the questionnaire used in this study, adding and removing certain topics/items according to the results obtained from the focus groups. Nonetheless, as Lee's questionnaire was written in English, the translation to Portuguese was necessary. A native speaker checked the Portuguese version of the questionnaire and reviewed its translation.

The questions/sentences consisted mainly of a 7-point Likert scale to assess the significance attributed by each student to an attitude, feeling or to a given object. Other issues intended to classify attitudes and priorities, according to a preference scale, were also considered. An open question was also considered allowing the respondent to enumerate suggestions for vending services' improvement. Throughout the development of the preliminary version of the questionnaire, several difficulties in answering some questions set according to the Lee's (2003) work were encountered. So, a Likert scale was preferred in order to overcome this issue. However, and according to the literature review, the variable involvement and their items were measured by a differential semantic scale like in Lee's (2003) work.

Another main difference was the sample universe: US Northeast – Lee's (2003) work – and the North of Portugal. Through the differences inherent to this two-sample universe, different information could be obtained and "in this situation, it is important to check the relevance, clarity and understanding of questions applied to the new universe respondents" (Hill & Hill, 2009, pp.??), so special attention was given to precise formulation of the questions. These formulations were made considering the results obtained from the focus group, i.e., according to the Portuguese university students population. Then, the second version of the questionnaire was applied to a random group of students, and no changes were necessary to be made.

### **Final Remarks**

The purpose of the definition of focus groups in the identification of consumer's involvement in the use of VM was achieved. The findings allowed the identification of constructs and attributes and the description of involvements and attitudes towards bad experiences concerning VM.

The relevant constructs of variable involvement were: useless/useful, profitless/profitable, unimportant/important unnecessary/necessary, irrelevant/ relevant and boring/interesting. Regarding the main attributes, location, price, type, variety, quality, brand of products and machine handling mode were identified. Although with minor differences, the

results are similar to the ones obtained by Lee (2003). In addition, students put forth some viewpoints, like greater product variety, better quality, lower prices and the existence of healthier products.

Concerning attitudes of the students towards bad experiences, extreme behaviours were described, from doing nothing to pushing the machine, with the limit to not using the VM anymore. Nevertheless, the “right” behaviour was also identified (i.e., to contact the vending service company from the contact number available on the VM, or contact someone in charge of the university about the event). If consumers do not have attitudes of claim, a negative word-of-mouth statement can stimulate attitudes of non-utilization of VM, which is not beneficial for the vending business.

Regarding bad experiences, the vast majority have to do with the handling of the VM, the retention of money without the transfer of the selected product, the product getting stuck, the VM not giving back change, or the difficulty in knowing how to use the VM for lack of signalling points to handle the machine.

The identification of constructs and attributes were an important topic in the development of a questionnaire to be applied to a larger group of students/consumers. With all the data collected (qualitative and quantitative), a triangulation was performed in order to complement data, reinforcing results and contributing to the development of knowledge and exposing possible different perspectives with the main purpose of answering a new investigation research question: “What is the position of operations management and marketing in the operation of vending machines?”

Focus groups generally provide instantaneous ideas for the improvement of particular products or concepts. They also help identify the product requirements of the end-user, allowing the evaluation of the reaction of customers to the design of a product, packaging, price and message. However, the use of Focus Groups methodology has some limitations: excessive time consuming of transcriptions of this type of data; the definition of the best scheduling of focus groups as it took place on a voluntary basis; the possibility that the members may not express their honest and personal opinions about the topic at hand. They may be hesitant to express their thoughts, especially when their thoughts oppose the views of another participant. In this case, the role of the moderator is crucial as to emphasising for the participants the importance of them being as honest as possible.

## References

- American Marketing Association (AMA). (2015). *AMA dictionary: Vending machine*. Retrieved from <http://www.ama.org/resources/>
- Asthana, S. (2013). Performance measurement variables in third party logistics (3PL): A literature review. *International Journal of Research*, 3(1), 17-22.
- Breen, R. L. (2006). A practical guide to focus-group research. *Journal of Geography in Higher Education*, 30(3), 463-475.
- Celuch, K., & Taylor, S. A. (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.
- Creswell, J. W., & Plano-Clark, V. L. (2011). *Designing and conducting mixed methods research* (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage Publications, Inc.
- Cyr, J. (2015). The pitfalls and promise of focus groups as a data collection method. *Sociological Methods & Research*, 1-29. Retrieved from <http://smr.sagepub.com/content/early/2015/02/04/0049124115570065.full.pdf>
- European Vending Association (EVA). (2014). *Telling the good story of coffee service and vending*. Retrieved from <http://www.vending-europe.eu>

- Fernandes, T. (2015). *O papel da gestão de operações e do marketing no funcionamento de máquinas vending*. Famalicão, Portugal: Universidade Lusíada.
- Fernandes, T., Silva, A., Leão, C. P., & Reis, R. (2015). Consumer's involvement in the use of vending machines: Construction based on focus group. *Proceedings of 4<sup>th</sup> Ibero-American Congress on Qualitative Research (CIAIQ2015)*, 5-7 August, 2015, Tiradentes, Aracaju, Brazil, 4, 37-42.
- Fortin, M.-F. (2009). *Fundamentos e etapas do processo de investigação*. Loures, Portugal: Lusodidacta.
- Goffin, K. (2000). Design for supportability: An essential component of new product development. *Research-Technology Management*, 43(2), 40-51.
- Gronroos, C. (2007). *Service management and marketing: Customer management in service competition* (3<sup>rd</sup> ed.). Hoboken, NJ: John Wiley & Sons, Inc.
- Hill, M. M., & Hill, A. (2009). *Investigação por questionário* (2<sup>nd</sup> ed.). Lisbon, Portugal: Edições Sílabo, Lda.
- Ketzenberg, M. E., Geismar, N., Metters, R. D., & Laan, E. A. (2011). *The value of information for managing inventory in vending machines*. Retrieved from <http://www.vending.org/images/pdf/vending/vending-revision-03-31-11.pdf>
- Lee, D. H. (2003). Consumers' experiences, opinions, attitudes, satisfaction, dissatisfaction, and complaining behavior with vending machines. *Journal of Consumer, Satisfaction, Dissatisfaction and Complaining Behavior*, 16, 178-197.
- Liamputtong, P. (2011). *Focus group methodology*. Thousand Oaks, CA: Sage.
- Malhotra, N. K., & Birks, D. F. (2006). *Marketing research: An applied approach*. London, UK: Pearson Education Limited.
- Manrique, G., & Manrique, C. (2011). The global supply chain in the digital age: Transformative factors affecting industrial vending. *Proceedings of the Global Conference on Business and Finance*, 6(2), 184-190.
- Merton, R. K., Fiske, M., & Kendall, P. L. (1956). *The focused interview: A manual of problems and procedures*. Glencoe, IL: The Free Press.
- Michal, G., Keusch, P., & Kemec, P. (2009). Faults, failures and availability in self-service technology. *Management Services*, 53(4), 44-47.
- Miles, M., & Huberman, M. (1984). *Qualitative data analysis: An expanded sourcebook* (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage Publications, Inc.
- Mousa, I. A., & Zoubi, F. H. (2011). Exploring relationship marketing performance success: An empirical investigation in the insurance services sector from a management perspective. *Amity Global Business Review*, 1-30.
- Nassar-McMillan, S. C. & Borders, L. D. (2002). Use of focus groups in survey item development. *The Qualitative Report*, 7(1), 1-12. Retrieved from <http://nsuworks.nova.edu/tqr/vol7/iss1/3/>.
- Onwuegbuzie, A. J., & Teddlie, C. (2003). A framework analysing data in mixed methods. In A. Tashakkori and C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research* (pp. 351-383). Thousand Oaks, CA: Sage Publications, Inc.
- Price, J. (2012). De-fizzing schools: The effect on student behaviour of having vending machines in schools. *Agricultural and Resource Economics Review*, 41(1), 92-99.
- Quesada, G., Rachamadugu, R., Gonzalez, N., & Martinez, J. L. (2008). Linking order winning and external supply chain integration strategies. *Supply Chain Management: An International Journal*, 13(4), 296-303.
- Rabiee, F. (2004). Focus-group interview and data analysis. *Proceedings of the Nutrition Society*, 63, 655-660. Retrieved from [http://journals.cambridge.org/download.php?file=%2FPNS%2FPNS63\\_04%2FS0029665104000874a.pdf&code=99067b06eebfd23101f7ea49a2a202a6](http://journals.cambridge.org/download.php?file=%2FPNS%2FPNS63_04%2FS0029665104000874a.pdf&code=99067b06eebfd23101f7ea49a2a202a6). DOI:10.1079/PNS200 4399.

- Rio-Roberts, M. (2011). How I learned to conduct focus groups. *The Qualitative Report*, 16(1), 312-315. Retrieved from <http://nsuworks.nova.edu/tqr/vol16/iss1/22/>.
- Rusdiansyah, A., & Tsao, D. (2005). An integrated model of the periodic delivery problems for vending-machine supply chains. *Journal of Food Engineering*, 70, 421-434.
- Suter, E. A. (2000). Focus groups in ethnography of communication: Expanding topics of inquiry beyond participant observation. *The Qualitative Report*, 5(1), 1-14. Retrieved from <http://nsuworks.nova.edu/tqr/vol5/iss1/1/>.
- Weele, A. J. V. (2010). *Purchasing and supply chain management: Analysis, strategy, planning and practice* (5<sup>th</sup> ed.). Boston, MA: Cengage Learning.
- Zaichkowsky, J. L. (1985). Measuring the involvement construct. *Journal of Consumer Research*, 12, 341-352.

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