

# An Analysis on the Perception and Situational Factors in Using Vending Machine among Universities' Students in Malaysia

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## Abstract

This main objective of this research is to further analyse the perception and situational factors in using vending machine among universities' students in Malaysia. There were two parts in this study, the first part was to investigate the perception of Malaysia's universities' students in using vending machine. The second part was to analyse the situational factors that influence universities' students in Malaysia in using vending machine. This research was conducted using quantitative method through a set of constructed questionnaire survey. The target respondents for this research were students from different universities in Malaysia. The questionnaire survey was distributed in several universities, such as Taylor's University, Sunway University, Monash University and others, mainly to the universities' students who use vending machine. The sample size was 313 respondents who fairly selected by using non-probability sampling method such as convenience sampling and snowball sampling method. Overall, the results of the first part study illustrated there is a positive but weak relationship between perception and universities' students in using vending machine. In other words, it means that a positive perception does not leading to increase the usages of vending machine. The second part results illustrated that among all the situational factors, physical surroundings and task definition showing higher possibilities and influences towards universities' students' level of certainty in using vending machine.

**Keywords:** Perception, Situational Factors, Vending Machine, University students

## 1. Introduction

In today's fast pace lifestyle, where people are concern on fast and convenience, vending machine had became one of the trendy and indispensable part of modern life (Global Industry Analysts, 2012). According to Euromonitor (2014), the survey showed that the market size of vending machine in Malaysia is showing an upward trend since 2009. Based on the survey conducted by Euromonitor (2014), indicated that in 2009 the vending retail value was only at two hundred and eighty thousand Ringgit Malaysia (RM280,000), but it increased yearly amounted from at least five thousand Ringgit Malaysia (RM5,000) to ten thousand Ringgit Malaysia (RM10,000). According to Queich and Takeuchi (1981), vending machine would become one of the crucial non-store marketing channels that able to sell either goods or services outside the confines of retail facility. Indeed, vending machine tends to be in the form of non-store marketing channels in a way that when people deposit cash to the machine, the products stored in the machine will be dispensed to the customers (Chand, 2015).

## 2. Problem Statement

Naggar, Bobryshev and Noor (2013) stated that universities' students in Malaysia are having inconstant lifestyle especially on their eating habits. Studies showed that nowadays universities' students like to skip breakfast (Sakata, 2001), or when during peak assignments submission period, students will tends to take the sake of convenience and grab a quick snack from vending machine. Ezine (2008) agreed that in Japan, most of the students would like to purchase foods via vending machine instead of buying from the canteen or cafeteria. As survey suggested that Japanese students see vending machine as a creative, fun and innovative technology (Ramidden, 2008) and it is a helpful tools for them whenever they are in needs of foods to fill hunger especially they are in a hurry. In 2014, a non-profit organisation, Center for Science in the Public Interest (CSPI) based in Washington surveyed that there were 58 percent of sugar-sweetened beverages offered by vending machine. WebMD (2006) observed that there were 71 percent of students preferred to buy sodas and other sugar-sweetened beverages from vending machine, which were almost three (3) times higher than the percentage of buying water. This eventually marked 23 percent of teenagers to be diabetic or pre-diabetic in United States (CSPI, 2014), as research done by Harvard School Of Public Health (2015) stated that the major factors causing diabetes is due to excessive use of sugary drinks. According to International Diabetes Federation (2014), there were 3.2 million of diabetes populations in Malaysia in 2014. Results showed prevalence of diabetes in adults were 16.6 percent in 2014. In fact, diabetes is a silent killer, it will leads to blindness, kidney disease, amputations as well as heart disease and stroke (Diabetes Malaysia, 2013).

Research done by University of Michigan and Michigan Stated (AOL Health, 2010) reported that vending machines have the higher degree of possibility leading to unhealthy dietary habits and this might also caused obesity. Unfortunately, Malaysia was having the highest obesity rate among Asia countries (The Star

Online, 2014). The Lancet (2014), a British medical journal pointed out there were 49 percent of women and 44 percent of men in Malaysia were obesity. Whereby, the prevalence of obesity among Universities' students in Malaysia are in the range between 20 percent and 30.1 percent (NCBI, 2014). Growing percentage in using vending machine, such as soft drinks vending machine might be one of the indirectly causes that contributed to the health issues in Malaysia, yet students still continue in using it. It is crucial to look into how student perceived vending machine and how are the situational factors influence them in using it, however there are still lacks of studies in this related field in Malaysia. Therefore, this research is to look in-depth into the perception of universities' students as well as the situational factors that influence universities' students in Malaysia in using vending machine.

### 3. Research Questions

There are two main research questions in this study as listed below:

- What are the universities' students' perceptions in Malaysia in using vending machine?
- What are the situational factors that influence universities' students in Malaysia in using vending machine?

### 4. Methodology

The first component is the attitudes towards behaviour, which applied in this research to describe the universities' students' perception on the product characteristics and service scape towards the usage of vending machine. Whereas the second component is the subjective norm, which referring to the situational factors that included physical surroundings, social surroundings, task definition, time and antecedent states that influence the universities' students in using vending machine. The age range of the respondents, universities' students were from 18 years old to 23 years old and above. Universities' students were being selected as the respondents for this research is because of they are more frequent involving in using the technology-based self-service, such as vending machine (Anitsal, 2005). The respondents were from different racial background or ethnic of universities' students within Malaysia were selected as the target respondents. One of the non-probability sampling, convenience sampling method were chosen to select the respondents for this research. Respondents were ease to obtain by using the convenience sampling method. Beyond this, another non-probability sampling, snowball sampling techniques were used for data collection too. Using the snowball sampling method, which by contacted with one or two of the universities' students from various universities within Malaysia, the target numbers of respondents were then reached in a short time and within the specific period.

A set of questionnaire were formed and designed to be the instrument to collect data. The Cronbach's alpha value showing 0.936 for the reliability test, this meaning that the questions used to gather responses are all reliable and good fitness. There were in total four sections in this questionnaire. The first section was to measure the respondents in the usage of vending machine. In this section, there were a few of dichotomous questions been formed to investigate the respondents towards the usage of vending machine, such as "Have you use your university's vending machine before?" and "Will you choose to purchase from a vending machine rather than going to buy from a normal store?". Respondents were also instructed to choose from the list for their preferred foods and beverages as well as how often of them in using vending machine.

In the second section, the personal involvement inventory (PII) scale (Zaichkowsky et al., 1994) that indicated in the research of Lee (2003) were adapted to test the universities students' perception in using vending machine. Zaichkowsky (1985) indicated that involvement is crucial to test on the individual's perception in the consumption experiences. For example, one of the questions were formed as the anchors for responses, "I consider the foods and beverages vending machine in my university's vending machine as \_\_\_\_\_." in the Likert scale format (1 to 5) with the four answers of "Useless – Useful", "Unimportant – Important", "Not beneficial – Beneficial" and "Means nothing to me – Means a lot to me".

The third section is to test on how the situational factors influence the universities' students in using vending machine. Five sub-variables, the Physical Surroundings, Social Surroundings, Task Definition, Time and Antecedent States were to measure the degree of certainty in using vending machine. Each of the sub-variables was constructed in the question formed of Likert scale format, from 1 being "not at all certain" to 5 being "very certain". In the last section of the questionnaire, it covers the respondents' demographic profile that included the gender, age, race, universities' names the respondents studying as well as the parents' qualifications, annual income and the respondents' monthly allowance.

### 5. Result and Discussion

Research question 1: What are the universities' students' perceptions in Malaysia in using vending machine? To test if there were any relationship between perceived servicescape and purchasing behaviour of universities' students in using vending machine. **Research question 2:** To test if there was relationship between product characteristics and purchasing behaviour of universities' students in using vending machine Correlation analysis

was used to measure the linear correlation. The Pearson's Correlation Coefficient, "r" value is used for this purpose to test the strength of the relationships formed below:

**Table 1: Correlation among the Variables**

	Purchasing Behaviour	Product Characteristics	Perceived Servicescape
Purchasing Behaviour	1		
Product Characteristics	0.383**	1	
Perceived Servicescape	0.277**	0.536**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed)

The correlation coefficient "r" value has to always be in the range in between -1 and +1. The -1 showing the perfect negative linear correlation, where if the coefficient "r" value near to -1, it shows there is a strong negative linear relationship in between variables. In other words an increase in the first variable will leads to decrease the other variable. Vice versa, if the correlation coefficient "r" value is showing +1, it means that there is a perfect positive relationship in between variables, also if the coefficient "r" value nearby +1, it tends to show the strong positive relationship among variables. This meaning that if there is an increase for a variable, the other variable will be increase as well.

### 5.1 Descriptive Statistical

For this part, Likert scale is used in the form of questionnaire to measure the degree of certainty of universities' students purchasing behaviour in using vending machine. Respondents were asked to response by ranking how likely or how certainty they would choose to purchase via vending machine from the statements under each situational factors' variables, in the range of minimum (1) being the "not at all certainty" and (5) being "very certainty".

#### 5.1.1 Physical Surroundings

	N	Minimum	Maximum	Mean	Std. Deviation
No physical stores nearby	313	1	5	3.48	1.050
VM outside classroom	313	1	5	3.38	1.089
Passed by VM	313	1	5	3.09	1.188
Valid N (listwise)	313				

**Table 2: Descriptive Statistics (Physical Surroundings)**

Table 2 above shows that among the three questions, which used to measure the physical surroundings variable, respondents are more certainty choose to purchase in using vending machine when there is no others physical food and beverages stores nearby where scoring the highest mean at 3.48. Followed by the second question, which was under the situation when the vending machine is just located outside your classroom is scoring the mean of 3.38. Lastly, there is only 3.09 score for mean in the last situation where when the respondents passed by the vending machine.

#### 5.1.2 Social Surroundings

**Table 3: Descriptive Statistics (Social Surroundings)**

	N	Minimum	Maximum	Mean	Std. Deviation
Friends using VM	313	1	5	3.03	1.112
Friends Eating Snack	313	1	5	3.04	1.185
Friends Drinks Soft Drinks	313	1	5	3.01	1.118
Friends Drinks Bottled /Canned Beverages	313	1	5	3.03	1.050
Friends Drinks Hot /Cold Beverages	313	1	5	3.06	1.110
Valid N (listwise)	313				

Table 3 above shows respondents were choosing the level of certainty in between neither uncertainty nor uncertain and somewhat certain for the social surroundings variable. The highest mean score at 3.06 which respondents are more certainty to purchase in using vending machine if they see friends are drinking any hot or cold beverages. Followed by the second highest mean score at 3.04 where respondents see friends are eating snack. Respondents also get influence to purchase in using vending machine when they see friends are using vending machine and drinking bottle or canned beverages, which both mean score at 3.03. Lastly, the lowest mean score at 3.01 which near to the range of neither uncertainty nor uncertain, when respondents see their friends drinking soft drinks.

### 5.1.3 Task Definition

**Table 4: Descriptive Statistics (Task Definition)**

	N	Minimum	Maximum	Mean	Std. Deviation
When you feel hungry	313	1	5	3.40	1.111
When you need Foods / Beverages to fill desires	313	1	5	3.41	1.123
When need to chew snacks	313	1	5	3.31	1.119
When cravings for snacks	313	1	5	3.37	1.164
Valid N (listwise)	313				

Table 4 above shows respondents are ranking more towards somewhat certainty for the task definition variable. The highest mean score at 3.41 which respondents are more certainty to purchase in using vending machine when they need foods or beverages to fulfil their desires. The next mean score at 3.40 which when the respondents feel hungry and followed by when they are cravings for snacks at the mean score of 3.37 in using vending machine to purchase. The last mean score at 3.31 was when the respondents need to chew snacks.

### 5.1.4 Time

**Table 5: Descriptive Statistics (Time)**

	N	Minimum	Maximum	Mean	Std. Deviation
When rushing to class	313	1	5	3.04	1.274
When rush to meet deadlines	313	1	5	3.13	1.361
When rush to discussion/meeting	313	1	5	3.29	3.203
When no break time in between classes	313	1	5	3.20	1.214
Valid N (listwise)	313				

Table 5 above shows the descriptive statistic for the time variable, respondents are more certainty in using vending machine to purchase when they are rushing to discussion or meeting, which having the highest mean score at 3.29. Secondly when respondents have no break time in between classes, at the mean score of 3.20 and followed by the mean score at 3.13, which when they rushing in meeting deadline. Lastly, the lowest mean score at 3.04 when respondents rushing to class.

### 5.1.5 Antecedent States

**Table 6: Descriptive Statistics (Antecedent States)**

	N	Minimum	Maximum	Mean	Std. Deviation
When you are bored	313	1	5	2.96	1.175
When you are worried / nervous	313	1	5	2.53	1.080
When you are angry / upset	313	1	5	2.56	1.123
When you are alone	313	1	5	2.83	1.246
When you are lazy	313	1	5	3.02	1.161
When you feeling unwell	313	1	5	2.42	1.089
When you have no appetite	313	1	5	2.54	1.157
When you are having finals exam	313	1	5	2.89	1.319
Valid N (listwise)	313				

Table 6 above shows the respondents ranking are more towards somewhat uncertainty. The only mean score moving over of 3 is when respondents feeling lazy at the mean score of 3.02. Whereby, when the respondents are bored having the mean score of 2.96 and when they are alone having the mean score of 2.83. The slightly towards neither uncertain nor certain are when the respondents are having final exam with the mean score of 2.89. Overall, there are three items over the mean score of 2.5, firstly is when the respondents are angry or upset, mean score at 2.56; secondly is when respondents have no appetite, mean score at 2.54; lastly is when respondents are worried or nervous, mean score at 2.53. The lowest mean score at 2.42 when respondents are feeling unwell.

## 6. Discussion of findings

The findings revealed that perceptions of two sub-variables showed most of the respondents are having a positive and significant relationship towards the usage of vending machine. In terms of servicescape, respondents perceived the vending machines are convenience located and surrounds with clean areas environment. In addition, respondents also perceived the vending machines are interesting and always function properly as well as favourable and good in operation. Beyond that, respondents perceived the range of products and products types selling by the vending machine are wide, excellent and fresh. Respondents also perceived the price of products selling in vending machine are inexpensive rather than towards expensive. Whereby, under the product characteristics' perception, most of the respondents perceived the foods and beverages vending

machines' characteristics in universities as useful, important, beneficial and also it means a lot to the respondents. Although there is a positive and significant relationship between perception and the usage of vending machine, yet both variables are only having a moderate relationship under the correlation analysis. In other words, a good perception does not have a strong relatively impact towards universities' students in Malaysia to purchase in using vending machine. The findings from this study are different from the researcher, Mack (2011) who indicated that if the consumers formed a good perception it will then leading to increase the products or services' sales chances. Whereby, Fredette (2011) also suggested that enhancing perception on servicescape may also lead to increase the usage of it. In addition, in the findings from Lee (2003) also suggested that product characteristics of vending machine in terms of convenience and easy-access help to create the impulsive demand. However, in this study although Malaysia's universities' students tend to have a positive and good perception in terms of the vending machine's servicescape and characteristics, yet the results illustrated that the usage frequency from most of the respondents in using beverages vending machine in the universities are less than once per week, whereby most of them have never use the foods or snacks vending machine before, even though they have the strong and good perception in using it.

The second research objective is to analyse the situational factors that influence universities' students in using vending machine in the context of Malaysia's universities. The results shown under the physical surroundings factor, respondents have the highest certainty level to purchase in using vending machine when there are no others physical foods and beverages stores nearby. This results indicated the similarity from the findings of Koelemeijer and Oppewal (1999) and Bone and Ellen (1999) who suggested that assortment of merchandise and others elements surround playing a crucial role in consumers' purchasing behaviour. The researcher also agree with the study done by Campus Time (2012) in University of Rochester which students are more likely to use the vending machine that located in parts of the campus where others foods options were inconvenient and far away located. Followed by the next factor, social surroundings, averagely the results showing that respondents are at the status where neither uncertainty nor certainty to purchase in using vending machine. This showed that respondents are less likely got influence of by their friends purchase in using vending machine. The outcomes of social surroundings in influencing in using vending machine are slightly different as compared to the past research. On the other hand, for the task definition factor, under the situation when the respondents need foods or beverages to fulfil their desires as well as when they feel hungry, they are more certainty purchase in using vending machine. As compared, respondents are less influence in using vending machine to purchase under the situation when they are cravings for snacks and need snacks to chew. These findings agreed with Klaphekw (2012) and Brwon (2012) who stated that students are more intend to purchase via vending machine mainly due to hunger, thirst and craving for snacks.

The researcher findings also show similar with the findings from Xie, Todorovic and Zhu (2014) who suggested due to force-dynamic effects, consumers will naturally walk towards the vending machine to purchase in order to satisfy their hunger or to quench thirst. Furthermore, under the time factor, respondents are most likely to use vending machine to purchase under the situation when they rush for discussion or to meeting. These findings agreed with Chapman et al. (1998) which time availability tend to be an influencing factor on making food choices purchase decision. The second condition makes respondents somewhat certain in using vending machine is when they have no break time in between classes, followed by when they need to rush assignments and meet the deadlines. These findings are similar with the Brown (2012) which suggested "convenience-time" was one of the main reasons makes students purchase via vending machine. The last factor antecedent states are the conditions and moods of the respondents. Averagely, the results showed that the respondents' moods and condition have less likely in influencing the respondents to purchase in using vending machine. However, under the conditions where respondents are bored and when they are having finals exam, they have higher level of certainty in using vending machine. This showed agreement with the researchers, Kanadiah et al. (2006) who reported that under the stressful condition, people will more intend to intake more sugar level, such as having soft drinks and eating chocolates, this happened to increase their purchasing in using vending machine. Out of all the situational factors, the factors physical surroundings and task definition having the most influential towards universities' students in using vending machine as illustrated from the findings.

## 7. Conclusion

Overall, the results has illustrated that a good and positive perception on servicescape and product characteristics towards vending machine do not indicated that it will have higher possibilities that influence universities' students to purchase in using it. Therefore, besides maintain and keep the main operation and services of vending machine, marketers may improve from another perspectives to influence the respondents increase in using vending machine but not focus on the forming the perception. Other than that, it also crucial to looks into under which situational factors universities' students are more certainty to purchase in using vending machine. The research concluded that among all the situational factors, physical surroundings and task definition playing the crucial roles to influence universities' students in using vending machine. Although, vending machine have



penetrating to people's life nowadays, however, these situational factors causing them to purchase in using vending machine might cause unhealthy eating lifestyle of universities' students, as they tend to seek for convenience and lazy to walk to the canteen or food court in the universities, as showing by the results of physical surrounding factors. In addition, they are also quite busy with their academic stuffs, such as rushing to classes and rushing assignment and thus neglected to have a proper meal but take vending machine foods or beverages to replace their main meal due to time constraints. Parents or the universities may need to keep more attention and concern on the universities' students eating lifestyles.

## 8. Recommendations

If the time and budget allow, it is recommended that future researchers can cover a larger sample group of populations in Malaysia, such as survey in the workplaces, Light Rail Transit (LRT) stations areas, which available with vending machines. A larger of sample size is more likely and better in generating more reliable results and findings. Beyond this, future researchers are also recommended to use a more statistical and reliable way or method in measuring and analysing data, such as regression analysis and multiple regression analysis. With these analyse methods, the findings would be more reliable and have higher possibilities to explain more in depth and precise. On the other hand, future researchers can also have a better form of questionnaires, which by including more questions relating as well as others possible factors for the study. This may help to enhance the research by providing a better understanding on how respondents perceived and thus influence them in using vending machine other than only the perception on servicescape and the product characteristics. In addition, by comparing with more situational factors, it is able to make a more significant comparison, thus leading to a higher accuracy finding. Finally, future researchers are also recommended to be more focus on investigating only a variable, either the perception or situational factors, so to provide a more in depth interpretation and results.

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