

A Growth for Vending Machine Market in India – Consumer Perception Analysis with Special Reference to BB Instant 24/7 Smart Grocery Store in Bangalore City

Dr Karthika P,

Assistant Professor, Department of Business Studies,
Vidyavardhaka College of Engineering,
Mysore, Karnataka,
Email: karthi.nathan21@gmail.com

Dr Narayanaswamy T

Assistant Professor, Department of Business Studies,
Vidyavardhaka College of Engineering,
Mysore, Karnataka,
Email: narentexmba@gmail.com

Dr Karthikeyan P,

Associate Professor, School of Management studies,
Kongu Engineering College,
Erode-638060, Tamilnadu.
Email: ptp.karthi@gmail.com

The bigbasket is the Bangalore based online retail store established in the year 2011 which is the time India's busy workforce in cities was finding difficult to assign some time to buy groceries and home essentials. The bigbasket business model was eye catchy for many institutional investors, so it received funding from various investors for expansion. In June 2015 bigbasket acquired the Delyver which was also an online grocery store. Delyver has the specialty of using local stores to deliver groceries to people. During the month of April 2018, bigbasket launched the vending machines and smaller distribution centers across various cities to strengthen its supply chain. India's first time without human intervention, 24/7 smart grocery store "BB instant" was setup by the company at around 200 places including offices and apartments in Bangalore city. In this study survey was conducted and data collected from 200 users to analyze how this new machine would be the convenient one for customers comparing to traditional purchasing and how customers perceive about this new way of purchasing. The study result indicates that good and positive perception on servicescape and product characteristics towards vending machine.

Key words: Vending Machine, 24/7 Grocery store, consumer perception.

Introduction

The 24 hours supermarket specialties are available all over the world, because of the changing need, lifestyle and busy working environment of people that make them engaged with during the daytime. Stores open 24 hours are pervasive across America. There are 152,794 shops listed by the National Association of Convenience Stores, among which 90 percent provide services and perform operations round-the-clock. New York City alone houses more than 1,500 independently run convenience store; it's hard to imagine the five townships without them [2]. Since 1980, 24- hours retail shops are operating in USA. In UK number of small retail units are operating all nights but the features of supermarket retailing were introduced in 1990s onwards [5]. Retailing in India has an ever-green demand. Food and grocery are the most encouraging area where setting up retail business in India. An insight of shopper retail format choice behavior will enable retailers to segment their market and target specific consumer groups with premeditated strategies to meet their retail needs [4].

Vending machines are presently passing on all the way through digital transformation linked with the global trend of connecting devices to the Internet. The development of the "Internet of things" (IoT) in the market of vending machines allows to go beyond the simply issuing of goods, providing more interactive and interesting user experience. The brand owner's collect the date from vending machine and apply the various analytics to increase efficiency of services and reduce their operating costs. The growth in urbanization and human traffic in public places will leads the applications of smart vending machine [3].

In India 24 hours retails stores are not required for all the areas but the entrepreneurs who want to open these kinds of store must concentrate the top few cities where the companies are operating round the clock [6]. The retail business is the emerging sector in India, Changes in consumer behaviour and lifestyle will drive growth of 24-hour stores in coming years. Based on this emerging trend in India, 350 vending machines have been set up across various cities in Bengaluru, Noida and Hyderabad by Bigbasket. These machines have capacity of storing 48 products themselves, including fruits, vegetables, milks and snacks. The BB instant machine initially supported for wallet-based payment system such as BB Wallet and paytm, but now-a-days, it also enables customers to use credit and debit cards. The Bigbasket company install these kinds of vending machines in one locality at a time instead of launching across the entire city. The business is very positive, and every vending machine starts generating a sales of Rs 5000 a day. The vending machine also comprises of bigbasket owned branded food items and beverages. Placing vending machine in every apartment and office premises creates awareness about the use of BB instant and provides alternate channel for customers to access products and offers of bigbasket with instant gratification. This article comprises 4 sections namely research hypotheses, methodology, result analysis and conclusion.

Research Hypotheses

H₁₀: There is no significant difference between age and Mean consumer perception towards Bigbasket vending machine

H₂₀: There is no significant difference between occupation and Mean consumer perception towards Bigbasket vending machine

H₃₀: There is no significant difference between education and Mean consumer perception towards Bigbasket vending machine

Methodology

This study is based on the descriptive research. The population frame would be 10000 people (users of the vending machine) living in 200 apartments of Bangalore city, Karnataka. The sampling frame for the research comprised of BB instant (vending machine) users from 5 locations of Bangalore namely Electronic city, Hongasandra, Hulimavu, Bommanahalli and CV Raman Nagar. The total number of respondents from whom the data was collected for the study is 320. Out of 320 responses, 200 survey forms were found to be with valid and complete responses.

Totally 23 items were constructed in the survey questionnaire. The first 4 questions are related to socio-economic and demographic profile. Question numbers 5 to 23 are related to various aspects of vending machine and the type of product stored in it. The responses are measured using nominal and interval scales. The question 14 to 23 are measured in 5-point Likert (5 = strongly agree to 1 =strongly disagree) scale. The internal consistency of the questionnaire was tested using Cronbach's alpha reliability test

Results Analysis

Profile of the respondents

All the respondents are adults; the user of BB instant vending machine consisted of 102 male and 98 females with 63% respondents are below 30 years. Many of the respondents are working women and businesspeople. The 92 percentage of the respondents had graduation as the educational qualification. The result of respondents' demographic profile is summarized in table 1.

Table 1 Respondents' Demographic Profile

Variable	Description	Frequency	%
Gender	Male	102	51
	Female	98	49
Age	18-24	74	37
	25-30	52	26
	31-35	46	23
	36-40	18	09

Occupation	Above 40	10	05
	Business	62	31
	House-wife	28	14
	Working Women	56	28
	Others	54	27
Education	SSLC	4	02
	Degree	150	75
	Degree and Above	36	18
	Others	10	05

Source : Primary Data

Table 2 Respondents' product & timing preference (includes multi-response items)

Q. No: 5 How often would you use a vending Machine?					
Everyday		A few times in a week		Rarely	
31%		66%		3%	
Q. No: 6 What kind of products would you prefer to buy through vending machine? (More than one item can be selected)					
Beverages	Snacks	Fruits	Vegetables	Any other	
76%	78%	84%	91%	15%	
Q. No: 7 Which option would you like to use for payment?					
Debit/Credit	Paytm	Wallet	Sodexo	Any other	
27%	69%	15%	61%	7%	
Q.No: 8 At what time in a day, would you like to buy products from a vending Machine?					
Morning	Afternoon after lunch	Afternoon before lunch	Evening	Late Evening	Depends on my need
26%	5%	15%	28%	15%	74%

From the table 2, majority (66%) of the respondents use vending machine for a few times in a week and they purchase whenever they want the product (there is no particular timing pattern is followed in buying activity). The beverages, fruits, vegetables, snacks are most frequently preferred items for purchase. The Paytm (69%) and Sodexo (61%) are the most preferred modes for making payment. From the Question number 6 to 8 more than one selection option is provided (multiple responses) in the survey form so the total percentage would not be 100%.

Source: Primary data

The responses for Q.No: 9 to 12 are summarized in the figure 1. Vegetable cutting is the time-consuming activity in the busy morning especially for working women, that's why 55% of BB

instant customers preferred to buy chopped vegetables. The figure 1 indicates that 91% of respondents willing to buy the fruits in packed form. 70% of the respondents are purchasing snack items which are branded under big basket comparing to another brand. So, the company has the scope to extend some more snack items in their own brand.

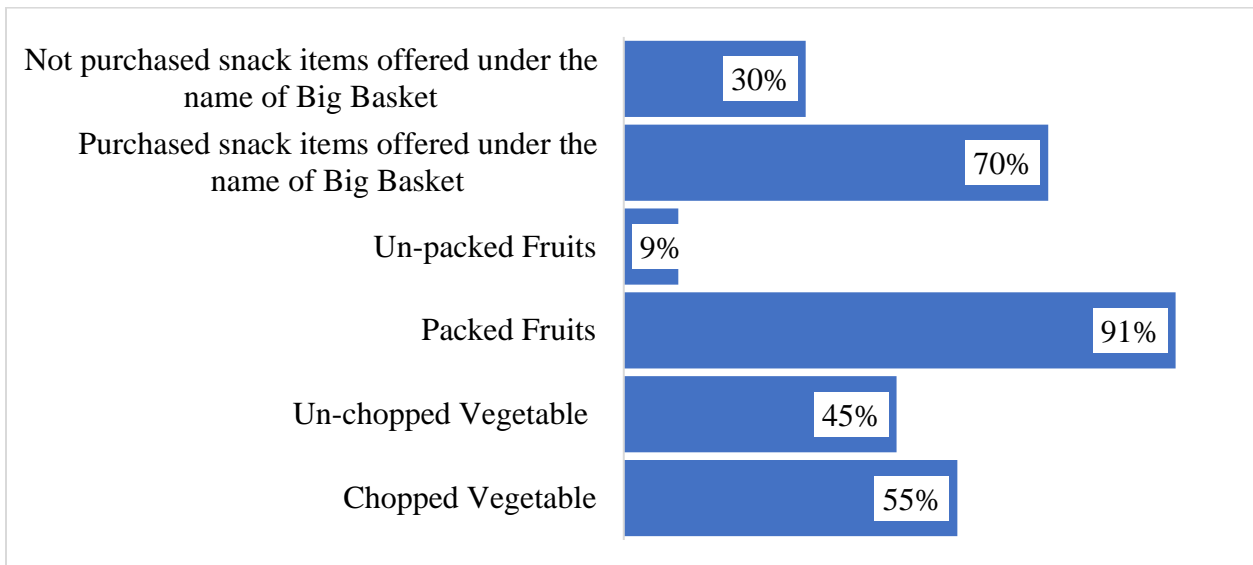


Figure 1 - Percentage of respondents buying various products preferred through BB instant vending machine (Multi-Response items)

Garrett’s ranking technique is used to find the most preferred and least preferred products [1] that can be availed through vending machine. The question no:13 includes five products names; among the five products each respondent rank from 1 to 5. Each product rank will be tabulated and calculate the percent position for rank 1 to rank 5 by using the following formula.

$$\text{Percent position} = 100 (R_{ij} - 0.5) N_j$$

Where R_{ij} = Rank given for the i^{th} variable by j^{th} respondents

N_j = Number of variables ranked by j^{th} respondents.

Table 3 Garret Ranking for product preference

Products	Garret Score					Total Score	AVG score	Rank
	1	2	3	4	5			
Beverages	7350	3240	900	320	550	12360	61.8	1
Fruits	3900	6000	1400	480	200	11980	59.9	2

Milk	4950	3600	2300	880	150	11880	59.4	3
Vegetables	2850	4920	2400	720	350	11240	56.2	4
Snacks	3900	3840	1800	1280	400	11220	56.1	5

After calculating percent position with the help of Garrett's Table, the percent position estimated is converted into scores. Then for each product, the scores of each individual ranks are added i.e total value of scores from the total value of score, mean values of score is calculated (total score/no. of respondents) which is summarized in table 3. The products having highest mean value is considered to be the most preferred product. It can be observed that average score is more or less closer to each other for the products such as beverages, fruits and milk which are the most preferred items to be brought through the vending machine. Next preferred items are vegetables and snacks which have equal score (closer to 56)

Features of Vending Machine:

From the question no:14 to 18 are relate to the features of vending machine. About 78% respondents have rated that the vending machine is easy to operate and user friendly. About 88% of users have agreed that the payment facilities attached to the vending machine is safe and secure. From the table 3, it can be found that almost 70 % of the users are happy about vending machine service time and frequency of refilling whereas 37% of respondents are not satisfied with the waiting time to purchase their products which indicates that users are expecting more machines to be installed in the premises. The Big basket company can consider the population in an apartment and accordingly sufficient number of machines should be installed.

Table 4 Features of Vending Machine

Criteria	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The Vending Machine is user friendly to operate	48%	30%	13%	8%	1%
The payment process is safe and secured	55%	33%	10%	1%	1%
In case of any breakdown, the vending machine is repaired within the reasonable time	38%	42%	2%	16%	2%
The products are refilled every day on time	35%	32%	18%	10%	5%
Enough machines are installed in the premises to reduce waiting time	45%	18%	14%	17%	6%

Product served in the vending machine:

Question no: 19 to 23 are related to the products served in the vending machine. From the table 5, it can be found that 86% of users are happy about the quality of the product available in the vending machine. This result is matched with the study of [3]. 74% of respondents have positively rated that packed items are dispatched from the machine in the proper shape. 70% of the users have agreed that the products are available at reasonable price. When coming to the availability of the necessary item/ products in the vending machine only 43% of respondents rated positively this indicated that BB instant user expecting a greater number of products which satisfy the daily needs of the consumers.

Table 5 Product served in the vending machine

Criteria	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The products/items in the vending machine are fresh and clean (of good quality)	38%	48%	10%	4%	0%
Necessary products/items are timely available in the vending machine	25%	18%	10%	35%	12%
The packed items are in proper shape when received from the vending machine	42%	32%	8%	12%	6%
It is possible to buy any quantity of products/items I prefer	35%	32%	14%	12%	7%
Price of the products/items are reasonable	55%	15%	7%	14%	9%

Analysis of Variance (ANOVA) between demographic factors and mean consumer perception towards Big Basket vending machine**Hypothesis -1**

H₀: There is no significant difference between age and Mean consumer perception towards Big Basket vending machine

H₁: There is a significant difference between age and Mean consumer perceptions towards Big Basket vending machine

Table 6 exhibiting the ANOVA test results for Mean consumer perception and Age factor

	S.S.	Deg. of Freedom	M.S	F statistics	Sig./P-value
B/w Groups	3.793	4	0.948	8.060	0.00
W/n Groups	22.941	195	0.118		
Total	26.734	199			
S.S → Sum of the squares, M.S → Mean square value, B/w → Between, W/n → Within					

The above table indicates whether there is a significant relationship between age and mean consumer perception towards usage of big basket vending machine. The significance value is 0.00 which is lesser than 5% level of significance. This means that consumer perception is statistically significant among different age groups.

Hypothesis -2

H₀: There is no significant difference between occupation and Mean consumer perception towards Big Basket vending machine

H₁: There is a significant difference between occupation and Mean consumer perceptions towards Big Basket vending machine

Table exhibiting the ANOVA test results for Mean consumer perception and occupation

	S.S.	Deg. of Freedom	M.S	F statistics	Sig./P-value
B/w Groups	4.525	3	1.508	12.887	0.00
W/n Groups	22.941	196	0.117		
Total	27.466	199			
S.S → Sum of the squares, M.S → Mean square value, B/w → Between, W/n → Within					

The above table indicates whether there is a significant relationship between occupation and mean consumer perception towards usage of big basket vending machine. The significance value is 0.00 which is lesser than 5% level of significance. This means that consumer perception is statistically significant among the different types of occupation.

Hypothesis -3

H₀: There is no significant difference between education and Mean consumer perception towards Big Basket vending machine

H₁: There is a significant difference between education and Mean consumer perceptions towards Big Basket vending machine

Table exhibiting the ANOVA test results for Mean consumer perception and education

	S.S.	Deg. of Freedom	M.S	F statistics	Sig./P-value
B/w Groups	14.654	3	4.885	41.733	0.00
W/n Groups	22.941	196	0.117		
Total	37.595	199			
S.S → Sum of the squares, M.S → Mean square value, B/w → Between, W/n → Within					

The above table indicates whether there is a significant relationship between education and mean consumer perception towards usage of big basket vending machine. The significance value is 0.00 which is lesser than 5% level of significance. This means that consumer perception is statistically significant among different levels of education.

Conclusion:

This study contributes to literature related to the 24/7 grocery store which is the emerging concept in India. There are many academic literatures is available relating to store format choice behavior in grocery retailing but this study may serve as starting point for future studies in 24/7 smart grocery store. The results of the study indicate that user of the BB instant vending machine is satisfied by the service provided by Bigbasket Company. The research findings provide complete understanding about customer product preference and expectation of services from BB instant vending machine. This comprehensive study also provides invaluable information to Big Basket company for understanding the vending machine users' need and develop new strategies to install more 24/7 smart grocery vending machine in other cities of India.

The study reveals that demographic factor of the respondents influences the usage of vending machine. About 66% of respondents told that they used a vending machine at few times in a week along with the main reasons for using BB instant vending machines are time savings, nearness, and around-the-clock availability. More than 50% of users expecting more no. of the necessary item/ products availability in the vending machine which satisfy the daily needs of them. So, the big basket company has to take further study in this area for introduction of new product item in the vending machine.

References:

- Dhanavandan, S. (2016). *Application of Garret ranking techniques: practical approach. International Journal of Library and Information Studies*, 6(3), 135–140. <https://doi.org/https://doi.org/10.1080/15325008.2013.834005>
- Eillie Anzilotti (2016 February 1) *A Brief History of the 24-Hour Convenience Store, Citylab.*
- Kevorkova, Z. A., Shinkareva, O., Panasenko, S., Nikishin, A., & Mayorova, E. (2018). *Prospects for Russian vending sector development based on consumer preference analysis. International Journal of Civil Engineering and Technology*, 9(10), 1169-1175.
- Prasad, C. J., & Aryasri, A. R. (2011). *Effect of shopper attributes on retail format choice behaviour for food and grocery retailing in India. International Journal of Retail and Distribution Management*, 39(1), 68–86. <https://doi.org/10.1108/09590551111104486>
- Richbell, S., & Kite, V. (2007). *Night shoppers in the “open 24 hours” supermarket: A profile. International Journal of Retail and Distribution Management*, 35(1), 54–68. <https://doi.org/10.1108/09590550710722341>
- Shuchi Bansal (2019 March) *Opinion | Is India ready for 24/7 convenience store format? live mint.*