

Predictor Model in Consumer Shopping by Vending Machines- the Indian Context

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Abstract

According to Ministry of Food Processing Industries, the Food and Grocery market of India is the sixth largest market in the world with retail contributing 70% of the sales. It constitutes the largest proportion of India's retail sector and is expected to reach Rs 61 lakh crores by 2020. With an increase in the disposable incomes, increase in young population, aspiring for better standard of living, more number of women in the workforce, Indian consumers have become more sophisticated, informed and aware. This study aims to identify and study the factors influencing innovative retailing practices in Grocery Retailing. Researchers' have attempted to identify factors affecting Indian consumers' Recommendation of purchase behavior from various perspectives. Making use of Innovative channels to reach consumers have been studied. There is little research in the literature available, on the factors influencing the Recommendation of Purchase Grocery retailing through Vending Machines , in the Indian Context. The methodology used is descriptive and the Willingness to recommend the usage of Vending Machines in Grocery retailing is influenced by factors like Reliability, Access and Monetary Aspects. This study will shed more light on the factors influencing Recommendation of Purchase in Grocery Retailing through Vending Machines in the Indian Context. This research will have Implications both in academics and Industry. This Research has both Managerial and Theoretical Contributions. While studying the factors influencing Recommending of Purchase in Grocery retailing through Vending Machines, is seen as Theoretical, Applications in the Industry on areas of focus in Recommendations of Purchase by Vending Machine for Retailers are the Managerial Implications.

Keywords: Vending Machines, Retailing, Factors, Predictor Model.

1. Introduction

According to Ministry of Food Processing Industries, the food and grocery market of India is the sixth largest market in the world with retail contributing 70% of the sales. It constitutes the largest proportion of India's retail sector and is expected to reach Rs 61 lakh crores by 2020 (HKTDC Report,2017). With an increase in the disposable incomes, increase in young population, urge for better standard of living, more number of women in the workforce, Indian consumers have become more sophisticated, informed and aware. Thus, they are more attracted toward organized retail arrangement characterized by better quality of products, longer shelf life, better shopping experiences with music, lighting, courteous and friendly employees, car parking facilities, etc. Customers today have become more informed which makes their expectations and perceptions with respect to service providers more oriented to change, thus, making the process of measurement and management of service quality a difficult task for the service provider (Vargo&Lusch, 2004). The traditional differentiation tools used by grocery retailers such as low price, discounts and promotions, etc. have become almost redundant as the same is leading to a vicious circle of price war.

As the offerings of grocery retailers are quite similar, there is a great need to make efforts for the betterment of service quality so as to better satisfy the customers and make them loyal. The Vending business has developed through the years, which involves the Vending Machine down to the final consumer (Fernandes, Silva, Reis, & Leao, 2016). Vending machines are one of the most important modern selling strategies around the world. Thus, marketers and retailers are continuously improving the retail effectiveness and efficiency through vending machines. (Takei, Hewitt, Bantog, & Becker, 2011). This promotes the application of marketing techniques such as cross-selling and up-selling. Cross-selling is selling of an additional product whereas up-selling is selling a product at a higher price. (Stoyanov, 2014). However, with the growth of global competition, the productivity of any business concern depends upon the behavioral aspect of consumers (Dr. Nath & Dr. Sahu, 2015). There is little research in the literature available, on the factors influencing the Recommendation of Purchase Grocery retailing through Vending Machines , in the Indian Context. This study will shed more light on the factors influencing Recommendation of Purchase in Grocery retailing through Vending Machines in the Indian Context. This research will have Implications both in academics and

Industry. This Research has both Managerial and Theoretical Contributions. While studying the factors influencing Recommending of Purchase in Grocery retailing through Vending Machines, is seen as Theoretical, Applications in the Industry on areas of focus in Recommendations of Purchase by Vending Machine for Retailers are the Managerial Implications

2. Literature Review

The application of new technologies in retailing is beneficial to both consumers and retailers since these technologies can enhance consumer in-store behaviour and decision-making, improve the collection and exchange of information, provide opportunities for the development of new products and services as well as new contacts through interactive tools between retailers and customers (Pantano&Migliarese, 2014;Pantano&Timmermans, 2014; Pantano, 2010).Roy et al. (2016)explore the main factors that formulate customers' experience of smart retail technologies. Furthermore, Vrontis et al. (2016) point out that smart retailing is as expected changing consumer behavior throughout the decision process stages (search, purchase, consumption and after-sales process) as well as becoming a vital innovative strategic approach for retailers' success. Moreover, the concept of smart retailing goes beyond the application of a modern technology to the retailing process by including a further level of "smartness" related to the employment of the technology (Pantano & Timmermans, 2014). When the world is moving around with advancement, time is the most important resource of all. It becomes unavoidable to save the time by all possible methods. In places such as shopping malls, Canteens and Retail Outlets, automation is incorporated for the automatic delivery of the products to the customers. A Smart Vending Machine is the one that dispenses items such as snacks, beverages, consumer products, and even books and to customers automatically, after the customer inserts currency or credit card into the machine. For instance, the vending machines are used in now a day to ease delivery. However, the technology is improved, now also we are seeing the traditional method in distribution of newspaper. Cool drink vending machine, ice-cream vending machine, chocolate vending machine, water/tea/coffee vending machines, etc. can be increasingly found to encroach the shops now a days, which reduces the time and also reduce the human effort required to recognize, search and deliver the product.(Nimisha,et al ,2017). The idea of Vending Machine is to have an automated service process, which is often referred to automated retail trade, automatic merchandising, and automatic sale(Stoyanov, 2014). The mechanism of a Vending Machine is to dispense items such as snacks, cold drinks, chocolates, and other consumer products to its customers automatically after the customer has inputted bills or coins into the machine. (Gondane, 2016). Vending Machines are said to be adaptable to any location, as they need a small space to install one. In the past years, these machines are mostly found in busy locations such as factories, offices, warehouses, and public areas such as airport terminals, railway stations and the alike. Now, these machines are often seen in hospitals, schools, mall lobbies, and comfort rooms. Moreover, Vending Machines give accessibility and convenience to its consumers since they can be installed almost everywhere. Consumer accessibility and convenience includes three components, which are price, time, and effort. Price is a perceived benefit in buying the product and thus, to offer a better and pricey product, it is important to take note of the design and hygiene of the Vending Machines. Time is a critical value since consumers' purchasing habits is dominated by the time saving factor. Effort defines the consumer convenience since Vending Machines offer fast and standardized service. (Stoyanov, 2014).

Vending Machines offer three possible ways of payment method such as cash payment, cashless payment, and non-contact payment. Cash payment is the cheapest mechanism in purchasing from a Vending Machine and is the most popular and widely used by consumers. Cashless payment offers greater convenience for the consumers and more security in cash turnover. However, there is a risk of theft with regard to consumer's personal information. Non-contact payment gives the consumer the feeling of convenience and security however; this requires significant investment. (Stoyanov, 2014)

In line with the cashless payment method, a periodical from District Administration Magazine discussed about the Business of Vending Machine where the machines are located in a school cafeteria and it is linked to student's lunch accounts. With this, students do not have to have cash to purchase snacks, which makes it hassle free. In addition, students are able to purchase different goods from many different providers, which makes the costs lower. Hence, if a provider has a low selling price on water but a high selling price on healthy juice, the juice can be bought elsewhere. (Lacey, 2013). Further, there is a common strategic and marketing advantage of cashless payment, which is the electronic gathering of data on consumers. With this, there is a potential to offer new and conventional products at higher prices. (Stoyanov, 2014).

In today's fast moving world, automatic appliances are much more preferable like automated dispensing machines. Automated dispensing machines for distribution of medications have been recommended as one potential mechanism to improve efficiency and patient safety, and it is widely used in many hospitals. Given that a machine like this can enhance the efficiency of medication distribution, there are still issues in reducing medication errors such as the user design and implementation systems. (Bhange, 2015). On one hand, distribution channels of Vending Machines offer great opportunities in communicating with consumers as they can be seen as both distribution and communication

channels in terms of interactive advertising show. (Stoyanov, 2014). A qualitative study conducted in 2014 by a group of professors coming from different universities in the United States of America examined the acceptability of using electronic vending machines to deliver oral rapid (human immunodeficiency virus) HIV self-testing kits. In this qualitative study, it has been found that the use of Vending Machines to dispense oral rapid HIV testing kits an acceptable test delivery model. Despite that the use of vending machines to dispense HIV testing kits is new, the participants have found this delivery method acceptable due to familiarity with such machines in their daily lives. Given this, there were previous studies found that vending machines are appropriate delivery models for stigmatized items such as condoms, tampons, and clean syringes. (Young, et al., 2014).

Moreover, a group of students and a professor from the College of Computer and Information Sciences at the Polytechnic University of the Philippines (PUP) conducted a study in 2015 regarding an automated vending machine for over-the-counter medicines, which they called as D-Vend. Based on the results of their study, the researchers concluded that the machine is completely dispensing the right medicine as requested by the user. Also, the machine is capable of storing medicines safely with correct and update able information and thus, it is reliable. And, in terms of accuracy, the machine is able to recognize the coins inputted. However, since the machine is just a prototype, it could not dispense monetary change and the material used is not physically secured hence; further upgrades must be done. (Calderon, Gabitan, Garcia, Lopez, Jamilan, & Domingo, 2015).

With regard to automated Vending Machine, a project designed in 2015 by an electronics-engineering student from Dwarkadas J Sanghvi College of Engineering, which is a touch screen based automated medical vending machine. The aim of this project is to create an automated emergency kit machine to provide medications on common diseases' symptoms in certain areas such as highways and rural areas. This is to address the unavailability of doctors in remote areas. Given this, the machine has the following features: ambulance facility, first aid facility, direct calling facility, dynamic GPS, smart card facility, and restocking medicine alert. The ambulance facility enables the patient to call up the Ambulance Services available at a particular location in case of emergency. The first aid facility allows the patient to make use of the first aid kit components such as cotton, adhesive bandages, anti-septic, etc. The direct calling facility is used if the patient has symptoms that he cannot identify and makes a call via Global System for Mobile (GSM) communication system to take advice from a consultant or directly to a doctor. The dynamic GPS is applicable when the machine is in moving state, as it will automatically update the local data of hospitals, medicals and consultants in the database. The smart card facility is an alternative mode of payment, as the machine does not display a coin assembly mechanism. And, the restocking medicine alert applies if the 24 particular medicine reaches its limit and a message will be delivered to the service center to inform the service providers to refill the stock. (Singh, 2015). As mentioned earlier on, automated vending machine is often referred to automated retail trade, which makes it distinguished from other traditional vending forms as it allows for easy introduction of new products. (Stoyanov, 2014).

The Vending business has developed through the years, which involves the Vending Machine down to the final consumer (Fernandes, Silva, Reis, & Leao, 2016). Vending machines are one of the most important modern selling strategies around the world. Thus, marketers and retailers are continuously improving the retail effectiveness and efficiency through vending machines. (Takei, Hewitt, Bantog, & Becker, 2011). This promotes the application of marketing techniques such as cross-selling and up-selling. Cross-selling is selling of an additional product whereas up-selling is selling a product at a higher price. (Stoyanov, 2014). However, with the growth of global competition, the productivity of any business concern depends upon the behavioral aspect of consumers (Dr. Nath & Dr. Sahu, 2015). Given this, there have been studies conducted to assess the consumer behavior in purchasing products via vending machines. In a study conducted in 2014, the researchers looked into the viability of coffee Vending Machine in Batangas City, Philippines. The researchers focused on the factors that contributed to the viability of coffee vending machine as well as the problems encountered in the business. These factors are categorized into sales performance, operational performance, and financial performance. (Carino, et al., 2014). However, in this literature review, sales performance and operational performance along with the problems encountered will be discussed. In terms of sales performance, the researchers determine five (5) factors that contributed to the viability of the coffee vending machine. These factors are more varieties to choose; latest technology service; location of the machine; provision for attraction; and target customers demand. From these factors, location of the machine ranked the highest whereas more varieties to choose from and latest technology service ranked the lowest. (Carino, et al., 2014).

Moreover, the researchers determine five (5) problems encountered in terms of sales performance. These problems are customer satisfaction is rarely achieve; system overload of the machine; inaccessibility of the place; dissatisfaction of the customers; and minimum promotional campaign. From the problems enumerated, dissatisfaction of the customers ranked the highest whereas system overload ranked the lowest. (Carino, et al., 2014) In terms of operational performance, the researchers also determine five (5) factors that contributed to the viability of the coffee vending machine. These factors are maintenance of coffee vending machine; availability of stuff; convenience of the use of the

machine; acquisition of machine; and longer hours of operation. From these factors, maintenance of the machine ranked the highest whereas longer hours of operation ranked the lowest. (Carino, et al., 2014).

Lastly, the researchers also determine five (5) problems encountered in terms of operational performance. These problems are damage of facilities and equipment brought about by costumers; insufficient supply of stuff; difficulties from the machine; high cost of repair; and machine operates at a limited time. From the problems enumerated, damage of facilities and equipment brought about by the costumers ranked the highest whereas difficulties from the machine ranked the lowest. (Carino, et al., 2014). In a study conducted in 2015, the researchers interpreted the opinions and criticisms of consumers at different places of Bhubaneswar regarding the tea and coffee vending machine. This study aims to evaluate the attractiveness and the dynamics of the tea and coffee vending machine. This is to further understand the marketability of the business both in the present and in the future.

(Dr. Nath & Dr. Sahu, 2015). Given this, the researchers made use of descriptive analysis where average, percentage, and frequencies are performed on the collected data. Based on the study, the respondents are mostly males whose ages range from 25 to 40 years old and of different professions. The respondents are most likely to consume tea over coffee for 2 to 3 times a day. As for the preferred brands of tea and coffee, the respondents prefer Tata and Bru, respectively. Moreover, the respondents' preference toward vending machine showed that they would likely to purchase their tea or coffee from a vending machine. And, the respondents are most likely aware of the vending machine through their friends and peers. (Dr. Nath & Dr. Sahu, 2015). Furthermore, the researchers also determine the factors that influence the consumers' purchase and use of tea and coffee vending machine. These factors are taste, freshness, availability and visibility, hygienic, after sales service, price, and variety in drinking pattern. It has been found out that consumers give more importance to hygiene followed by taste. On one hand, consumers give less importance to freshness and variety in drinking pattern. Lastly, price, availability and visibility, and after sales service affect the sales of the product. (Dr. Nath & Dr. Sahu, 2015). In addition, the researchers also consider the consumers opinion survey in purchasing tea or coffee from a vending machine. It has been found out that consumers prefer to purchase from a vending machine due to hygienic factor. Consumers also believe that proper ingredients are important during the preparation of tea or coffee from the machine. Thus, the taste of tea or coffee must be good. And, consumers have a specific brand preference for their tea or coffee. (Dr. Nath & Dr. Sahu, 2015). With the findings stated above, the researchers believe that the vending machine companies should pay more attention in promoting the product and its distribution channels. This could obtain a good market position in the vending machine sector. (Dr. Nath & Dr. Sahu, 2015). In a study conducted in 2013, the researchers measure the brand awareness among the consumers of coffee vending machines in Erode District, Tamil Nadu. To assess brand awareness of coffee vending machines among the target respondents, the researchers made use of qualitative and descriptive analyses. The respondents of this study are mostly males whose ages range from 25 to 34 years old. These respondents have only achieved secondary education that are earning 25,001 to 50,000 Rs under contract labor in the urban area. (Dr. Krishnakumar & Indumathi, 2013). Based on the findings of the study, the brand of coffee has a low influence with regard to the purchase behavior of consumers via vending machine. Instead, the price and the ease of availability greatly affect the choice of coffee of consumers. Also, the quality and the taste influence the purchase behavior of consumers. (Dr. Krishnakumar & Indumathi, 2013) The literature acknowledges the importance of involving the customer from the very initial steps of the product development process. Kleef et al. (2005) considered the integration of the 'voice of the consumer' early in the new product development process to be a critical success factor in new product development. Hoven (2011) stated that the best way to develop successful new products is to involve the potential customers in the early stages of their creation. An important aspect of consumer involvement in the new product development process is the identification of the consumer's needs and his or her preferences towards the design characteristics of the new product or service. The methods of gathering consumer needs and preferences can be classified into compositional and decompositional methods – additional details on these can be found in Monteiro et al. (2010). Due to the methodological approach taken in this research, where respondents were asked to directly rate the importance of each design attribute of the new product, compositional methods were used. In a study conducted in 2016, the researchers aim to analyze the perception and situational factors in using vending machine among students from different universities in Malaysia. To achieve this, the researchers made use of descriptive statistical analysis. The tool used to analyze the data is the Likert scale that measures the purchasing behavior of the respondents. The respondents of this study are asked to rank how likely or how certainty they would choose to purchase via vending machine from the situational factors given. Based on the findings of the study, the respondents would likely to purchase via vending machine for Reliability, Access and Monetary factors. These Factors are found to have a positive and significant relationship towards the usage of vending machine. (Bavani & Peng, 2016). Vending machines are widely used retailing devices in almost everywhere. These are effective in many places where "cultural and language difference exist in retailing". (Takei, Hewitt, Bantog, & Becker, 2011). Moreover, the technology of vending machine has transformed through the years, which made it more attractive and profitable. To note, vending machines gained popularity outside the United States like in China and Japan. (Manrique & Manrique,

2015). Thus, convenience of consumers and technological advancement are considered to be the critical success factors in vending machine industry (Takei, Hewitt, Bantog, & Becker, 2011). In the convenience retail sector, Krafft and Mantrala (2010) have stated that only innovators who adopt new technologies to create unique buying experiences for their customers will thrive in the European market. This is true for the Indian Market as well. There is little research done in Retailing by Vending Machines, especially in Recommending of Purchase by Vending Machine. This is the gap in research identified and this makes the study significant to bridge this and contribute to the existing field of knowledge. This lends support to the present research concerning the development of a Predictor Model for Recommendation of Purchase by Vending Machine.

Based on Literature review the following hypotheses are developed:

H₁ : The Reliability factor has a significant influence on recommending purchase by vending machines.

H₂ : The Access factor has a significant influence on recommending purchase by vending machines.

H₃ : The Monetary Factor has a significant influence on recommending purchase by vending machines.

3. Research Methodology

The study is descriptive for the purpose of developing a predictor model using regression for which data has been collected using random sampling targeting 480 customers having adequate experience in vending machine purchasing. Sampling units were residents in the city of Bangalore in India. While the selection of these customer respondents, due care has been taken to ensure diversity regarding demographic measures namely, gender, age, income, education and occupation. The measures influencing Vending machine based shopping behavior has been identified by the immense literature review and were included in the questionnaire. The Questionnaire was adopted from Angels DT et al, (2017). The questionnaire was pretested and suitable modifications were incorporated. This closed-ended questionnaire, with five point Likert scale asking the respondents to rate their level of agreement from strongly agree (5) to strongly disagree (1) regarding various measures influencing them to buy through Vending Machines was administered.

4. Data Analysis and Discussion

4.1 Descriptive Analysis:

The sample consisted of 53 percent of Male and 47 percent of female respondents, 64% in the age group of below 25 years and 22% between 25 and 35 years. Their Qualifications were in Under graduate level for 39% and 53% were postgraduates. Occupation wise about half of them were professionals and a third were businesspersons. 75% were Single and 29% of respondents were earning less than 2 lakhs per year and 39% were earning between 2 to 4 lakhs per year.

4.2 Factor Analysis

Factor Analysis using SPSS 22.0 version was conducted to identify the Factors influencing the Willingness to Recommend the purchase using Vending Machines.

Table 1 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			.910
Bartlett's Test of Sphericity	Approx. Chi-Square		4230.985
	Df		91
	Sig.		.000

This table shows two tests that indicate the suitability of your data for structure detection. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is a statistic that indicates the proportion of variance in your variables that might be caused by underlying factors. High values (close to 1.0) generally indicate that a factor analysis may be useful with your data. If the value is less than 0.50, the results of the factor analysis probably won't be very useful. Bartlett's test of sphericity tests the hypothesis that your correlation matrix is an identity matrix, which would indicate that your variables are unrelated and therefore unsuitable for structure detection. Small values (less than 0.05) of the significance level indicate that a factor analysis may be useful with your data. Taken together, these tests provide a minimum standard which should be passed before a factor analysis (or a principal components analysis) should be conducted. From the Rotated Component matrix, we can identify the Factors. There are three factors, which can be named as Reliability, Access and Monetary Aspects. These three factors explain 68% of the total variances. Table 2 Rotated Component Matrix Component

Table 2 Rotated Component Matrix^a

	Component		
	1	2	3
Location	.096	.817	.164
Availability	.267	.819	-.019
Functioning	.274	.821	-.021
Price	-.113	-.034	.801
Range	.535	.630	-.104
Convenience	.579	.567	-.167
Quality	.442	.671	.007
Complaint	.640	.485	-.078
Food Condition	.678	.042	-.005
Ease of refund	.151	.041	.683
Experience of use	.699	.449	.144
Compared to other retail format	.766	.424	.022
Trustworthy	.846	.241	-.023

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.^a

4.3 Regression Analysis

Regression was done with the factors identified as independent variables and Willingness to Recommend purchase using Vending machines as the Dependent Variable.

Table 3 Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Monetary, Access, Reliability	.	Enter
a. Dependent Variable: Recommendation to Purchase			
b. All requested variables entered.			

Table 4 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	
					R Square Change	F Change
1	.680 ^a	.463	.460	.95766	.463	136.821

This table explain the model summary. The *R* value represents the simple correlation and is 0.680 (the "R" Column), which indicates a good degree of correlation .The R square is the ratio of the total variation that explains how the dependant variable values are affected the independent variables, and should be between zero and one, with a higher value indicating more explanatory power by the independent variables.The R square is 0.75,which means the formulated model is good on explanatory power.

Table 5 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	376.439	3	125.480	136.821	.000 ^b
	Residual	436.543	476	.917		
	Total	812.981	479			
a. Dependent Variable: Recommendation to Purchase						
b. Predictors: (Constant), Monetary ,Access, Reliability						

This table indicates that the regression model predicts the dependent variable significantly well. This indicates the statistical significance of the regression model that was run. Here, $p < 0.0005$, which is less than 0.05, and indicates that, overall, the regression model statistically significantly predicts the outcome variable i.e., it is a good fit for the data.

Table6 Coefficients Table

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.863	.162		-5.321	.000
	Reliability	1.023	.104	.588	9.874	.000
	Access	.296	.074	.200	4.018	.000
	Monetary	-.135	.089	-.084	-1.522	.129

The Coefficients table provides us with the necessary information to predict price from income, as well as determine whether income contributes statistically significantly to the model (by looking at the "Sig." column). Furthermore, we can use the values in the "B" column under the "Unstandardized Coefficients" column, as shown below: The regression model will be:

Recommending of purchase by Vending Machine = $-0.863 + 1.023 * \text{Reliability} + 0.296 * \text{Access} - 0.135 * \text{Monetary Aspects}$

The Factors Reliability and Access significant at 5% or 0.05 level of significance, on the dependent variable Recommending of purchase by Vending Machine. So the Hypotheses H1, H2, are accepted. These Factors have a significant Influence on Recommending of Purchase by Vending Machines.

The Factor Monetary Aspects is not significant at 5% or 0.05 level of significance on the dependent variable Recommending of purchase by Vending Machine. So the Hypotheses H3 are rejected. These Factors have a significant influence on Recommending of Purchase by Vending Machine. The Willingness to Recommend purchase through Vending Machines is as per prior research that states that the respondents are most likely aware of the vending machine through their friends and peers. (Dr. Nath & Dr. Sahu, 2015). These Factors such as Reliability, Access and Monetary aspects are found to have a positive and significant relationship towards the usage of vending machine. (Bavani & Peng, 2016). To sum, vending channels can be generally defined as a means of providing goods or services through a vending machine on a self-service basis. (Stoyanov, 2014). The variables The Factors Influencing Recommending of Purchase by Vending Machine are to be focused by the Marketers who want to promote Vending Machine based Retailing especially for Grocery Retailing.

5. Conclusion limitations and scope for further research

This research has resulted in the development of Regression model based prediction on the dependent variable Recommending of purchase by Vending Machine. This study has addressed a gap in research in Vending machine based retailing.

The academic implications will be development of such a model for predicting Recommending of purchase by Vending Machine, and the model fit and significance of influence of independent variables on the dependent variable Recommending of purchase by Vending Machine. The managerial implications can be on the focus areas for organizations to improve recommendations for retailing by Vending machines.

Though the sample is representative and randomly selected, the study was conducted in Bangalore. Similar studies can be conducted across the country. Further studies on Structural modeling for Recommendations for retailing by Vending Machines can be conducted.

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