

ANALYZING THE SHIFT IN CONSUMER DECISION WITH RESPECT BUYING BEHAVIOR THROUGH BIG DATA ANALYSIS

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Abstract

In today's commercial world, organizations are facing severe competitions from various aspects such as technological, global forces of recession and the like. In such a scenario, the fusion of information technology with the data generated by business processes of the organization provide vital insights into the means and mechanism for analyzing the consumer behavior with respect to buying decisions. This paper is an attempt to discuss the issues of Big Data which can be utilized to achieve the objective of analyzing the consumer decision of buying the product or not. The design of the paper follows a structured approach. It starts with the basics of Big Data gradually covering the Big Data analytics portion and finally moving to the practical aspects of the analysis. In order to bring out the conceptual clarity, the paper presents a practical implementation and usage.

Keywords: Analytics, Big Data, Competition, Objective

Introduction

The business world of today is hyper competitive and complex. Hyper competitive in the sense that the business units are always trying to live up to the phrase what my competitor can do? I can do the same thing 10 times better. In other words the bottom line is “the competition in business is here to stay” and “with a pace that is mind boggling”. In other words, business units must equip themselves to brace this competition. For, the competition is not confined to any single source. It can creep in from the happenings across the world such as global warming and green peace tribunals or it can barge in from the financial crisis faced by nations in Europe such as debt crisis faced by Greece or it quietly make its impact in the form of technological advancements of Information Technology. In other words, competition has multiple avenues from the most unexpected quarters and the only viable solution for the business units is to ensure that they adopt pro-active measures to stand up to the challenge impose on them.

One of the ways in which the business units can withstand the challenge is to apply the power of information technology and utilize the past and the present results which will prompt them to come up pro-active measures that will provide some sort of leadership

position. For, it has been observed that when Information technology has been applied on the past results or outcome i.e. the data, it has produced stupendous insights on which the organizations did adopt pro-active measures and have been able to attain leadership position in the market. For, example weather forecasting utilizes the power of information technology and the past data to make weather predictions.

Thus, we have the concept of Big Data wherein in large data sets are subjected to the power of Information technology to generate insight from that data so that pro-active measures can be formulated for onward processing so that facing the competition becomes relatively easy.

Worth mentioning is the fact that Big Data Analytics is widely being used across several organizations and commercial units. For, corporate stalwarts are required to take crucial decisions and these decisions must be based on data the concept and application of Big Data just provides them the matter that they ardently look for.

Defining Big Data

The term Big Data is a generic term. Generic in the sense that big data has several concomitants to it meaning that depending on what one looks at, the definition of big data takes the shape.

For example, to a technical person the concept of Big Data will mean the volume of the flow of data. For example in the case of railway ticket booking under tatkal tickets booking time, the volume of data is very large that is maximum number of persons are trying to get their tickets confirmed. Thus, Big Data in this case is the maximum flow of data. In another case, the term Big Data means the size of the details required to be filled in. For example, in the case of admission to a hospital, the patient details contains many fields covering the details of disease including the details of past surgery, treatment, operation etc.

For commercial units, the term Big Data is construed to mean the data in terms of time period covering several aspects of the customer. For example, the details of the various customer for the last 2 years who have been frequenting the departmental store and have been purchasing specific items or have been enquiring for items which are unavailable in the store though they are available elsewhere.

Defining Big Data Analytics

Having defined the word Big Data let us now move to define the term Big Data Analytics. The term Big Data Analytics is used to refer to the output generated by applying the means and mechanism

by utilizing the power of Information technology so as to develop action plans which will at least provide some sort of competitive advantage when these action plans are actually implemented meaning that action has been taken. In other words, it is the action which really provides the thrust for gaining competitive advantage. If there is no action, then the real advantage of Big Data analytics is lost.

Using Big Data for analyzing consumer decision and buying behavior

Having understood the basics of Big Data and Big Data analytics, let us now move to the application of Big Data for analyzing the consumer decision and buying behavior.

For a commercial business unit, consumer is the most important entity due to the fact that it is the consumer which ensures the survival of business unit. If there is no consumer, there is no business unit. Hence, it becomes imperative to analyze the consumer decision with respect to buying behavior. Easy as it sounds, when it comes to the practical implementation of analyzing the buying behavior of the

consumer, there are several points which need to be taken care of while using Big Data.

The following are some of the points which need to be into consideration are enumerated below:

- **Setting the objectives of the analytics program.** This is the crucial aspect of the program when dealing with Big Data. This translates to the fact in answering the question “What is it that we really want to come out of this Big Data Analytics Program”. For example, the executive management may have data pertaining to the types of the products purchased by school going children in the age group of 12-15 years. But, the management has to answer the question “What is it we want to extract from this data”. Once this basic question is answered, the rest of the process of analyzing the consumer buying decision becomes relatively easy.
- **Identifying the parameters which will lead to objectives of the program.** This is another crucial step

which must follow the objective setting of the program. In essence, this step is used to answer the key question “What are the parameters required to reach to the defined objective”. For example, if the objective of the business unit is to analyze the buying behavior of FMCG products of school going children then this step will involve answering the question “What types of FMCG products” i.e. whether it is toothpaste or Noodles and the like. This is crucial. For, the commercial unit may have the Big Data but it is devoid of this information. In that case, different parameters must be identified. Alternatively, the commercial unit may want to maintain the information they may design the system.

- **Performing Analytics on the data based on the identified parameters.** This is the most important aspect of the Big Data Analytics program on account of the fact that this provides the visibility on the patterns and trends of the data to the executive management to take further action.

The table1, below depicts the concept discussed above

Objective	To study the buying behavior of FMCG products of school going children in the age group 12-15 yrs.	
Reason for this objective	School going children offer the greatest potential for purchase of FMCG products thereby indirectly contributing to revenue	
Time period of Analytics Program	6 months <i>Data Analytics beginning July, 2015</i>	
Parameter Identified	Category	Reasons
FMCG	Toothpaste	<ul style="list-style-type: none"> • Used Daily by students • Promoted by School Authorities • Eat too much chocolate, toffees etc.
	Noodles	<ul style="list-style-type: none"> • Students love to eat • Quite popular because of taste
Parameter Identified	Category	Analytics to performed
FMCG	Toothpaste	<ul style="list-style-type: none"> • Overall Mean purchase per month • Mean purchase per month per category • Mean purchase per month of competitors product
	Noodles	<ul style="list-style-type: none"> • Overall Mean purchase per month • Mean purchase per month per category • Mean purchase per month of competitors product

Table 1, Depiction of Big Data Analytics program

The screenshot given below depicts the *Big Data* information maintained in a *Data Warehouse*

Student	Age	Gender	Class	Toothpaste Brand	School	Area
Mukesh	12	Male	6	Colgate	GreenField Public	Rohini
Sachin	13	Male	7	Pepsodent	Hansraj	Pitampura
Fatima	14	Female	8	Colgate	Lancer	Noida
Surendra	12	Male	7	Colgate	GreenField Public	Noida
Harpreet	13	Male	6	Pepsodent	GreenField Public	Rohini
Suresh	12	Male	8	Forhans	Hansraj	Pitampura
Ramesh	13	Male	7	Forhans	Lancer	Noida
Suman	14	Female	7	Colgate	Lancer	Noida
Mukesh	15	Male	6	Colgate	Lancer	Rohini
Fahima	15	Female	6	Forhans	GreenField Public	Pitampura
Kishore	15	Male	6	Forhans	GreenField Public	Noida
Ganesh	15	Male	8	Pepsodent	GreenField Public	Noida
Yogesh	12	Male	8	Pepsodent	Hansraj	Rohini
Prerna	12	Female	8	Colgate	Hansraj	Pitampura
Sonali	12	Female	7	Forhans	Hansraj	Noida
Kamini	13	Female	7	Pepsodent	GreenField Public	Noida
Rupali	14	Female	6	Pepsodent	Hansraj	Rohini
Usha	15	Female	7	Colgate	Hansraj	Pitampura
Sumesh	12	Male	8	Colgate	GreenField Public	Noida
Kamesh	15	Male	8	Colgate	GreenField Public	Noida

The following tables depict the various analytics that can be generated from the above screen shot comprising of sample size 20

Student	Age	Gender	Class	Toothpaste Brand	School	Area
Mukesh	12	Male	6	Colgate	GreenField Public	Rohini
Fatima	14	Female	8	Colgate	Lancer	Noida
Surendra	12	Male	7	Colgate	GreenField Public	Noida
Suman	14	Female	7	Colgate	Lancer	Noida
Mukesh	15	Male	6	Colgate	Lancer	Rohini
Prerna	12	Female	8	Colgate	Hansraj	Pitampura
Usha	15	Female	7	Colgate	Hansraj	Pitampura
Sumesh	12	Male	8	Colgate	GreenField Public	Noida
Kamesh	15	Male	8	Colgate	GreenField Public	Noida

This figure depicts the *Big Data* Analytics for those students who use Colgate toothpaste. We may further drill down this data as

Student	Age	Gender	Class	Toothpaste Brand	School	Area
Mukesh	12	Male	6	Colgate	GreenField Public	Rohini
Surendra	12	Male	7	Colgate	GreenField Public	Noida
Sumesh	12	Male	8	Colgate	GreenField Public	Noida
Kamesh	15	Male	8	Colgate	GreenField Public	Noida

The details of the students using Colgate toothpaste and are studying or have studied in Greenfield public school.

We may drill this information further as

Student	Age	Gender	Class	Toothpaste Brand	School	Area
Mukesh	12	Male	6	Colgate	GreenField Public	Rohini
Surendra	12	Male	7	Colgate	GreenField Public	Noida

Details of students who use Colgate toothpaste, are studying in class 6th and class 7th and are studying in Greenfield Public School. We may further depict the details of the competitor product as per the objective assuming that Pepsodent and Forhans are our competitors

Student	Age	Gender	Class	Toothpaste Brand	School	Area
Sachin	13	Male	7	Pepsodent	Hansraj	Pitampura
Harpreet	13	Male	6	Pepsodent	GreenField Public	Rohini
Suresh	12	Male	8	Forhans	Hansraj	Pitampura
Ramesh	13	Male	7	Forhans	Lancer	Noida
Fahima	15	Female	6	Forhans	GreenField Public	Pitampura
Kishore	15	Male	6	Forhans	GreenField Public	Noida
Ganesh	15	Male	8	Pepsodent	GreenField Public	Noida
Yogesh	12	Male	8	Pepsodent	Hansraj	Rohini
Sonali	12	Female	7	Forhans	Hansraj	Noida
Kamini	13	Female	7	Pepsodent	GreenField Public	Noida
Rupali	14	Female	6	Pepsodent	Hansraj	Rohini

Thus, we observe that the possibilities are many and Big Data can be tuned to provide several views of the information which we are looking for.

Limitations of Big Data

We have discussed the various issues related to Big Data analytics program. However there are certain limitations and apprehensions to the usage of the Big Data.

This limitation and apprehension is due to the fact that when it comes to data handling, certain precautions must be taken such as data verification and validation that is whether the data is correct or not, the frequency of updating the data that whether the data is the current data or not and above all ensuring that the data so captured or available is based on the identified

parameter or not with respect to the objectives of the data analytics program.

Conclusion:

From the above discussions, we infer that Big Data is here to stay and the commercial units must be equipped in applying Big Data analytics program so as to gain competitive advantage and thus thwart the marauding and cataclysmic effect of hyper competition. The only thing worth remembering is the fact that the results must of Big Data program must be translated into effective action program or else the entire exercise would be a failure.

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