

Determining the Impact of Artificial Intelligence on ‘Developing Marketing Strategies’ in Organized Retail Sector of West Bengal, India

Arunangshu Giri, Satakshi Chatterjee, Pradip Paul, Smita Chakraborty



Abstract: In this age of digitization, technology is evolving rapidly. Organizations are trying their best to match up with this evolution so that they are ready to face the competition in the market. Artificial Intelligence is the name of one such technology which is getting attention across the world because of its many advantages. Organized retail stores are one of the first sectors to successfully implement this technology in order to meet the demands of the customers. This technology also plays a crucial role in gathering the data as well as analyzing it. The results are useful for the development of new marketing strategies which might be adopted by the company in the future. This study aims to identify the factors which have a direct impact on the development of marketing strategies by the use of Artificial Intelligence. The study is limited to West Bengal, India. The target population was the employees who work in the retail outlets. Reliability as well as validity study along with Multiple Regression Analysis was implemented in this study. Some crucial factors were identified which were helpful in the designing of the effective and efficient marketing strategies of the retail sector firms through the extensive use of Artificial Intelligence.

Keywords: Artificial Intelligence, Organized Retail Sector, Marketing Strategies, Multiple-Regression Analysis

I. INTRODUCTION

There has been a new paradigm shift in technology. Technology is rapidly evolving and one of the most sought after topics in today's world is Artificial Intelligence. It has become an enigma in the market and organizations are looking for various ways to implement this piece of technology into their system. On a basic level, the term “intelligence” refers to the mental capabilities of an individual which is related to analysis, planning, problem solving and many more. Artificial Intelligence is regarded as a special branch in computer science. It deals with enabling the computer systems perform various tasks which are very similar to that of human intelligence processes such as deduction, learning and decision making. Artificial Intelligence also mechanizes the intelligent behavior of the humans.

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Advanced data systems, algorithms as well as a software language constitute an Artificial Intelligence system. Artificial Intelligence is used by many organizations especially in marketing. Marketing strategies could be developed by the analysis of various parameters such as the client's needs, the collection of products, accessibility to the clients, etc.

There are various types of marketing strategies such as cost leadership strategies, differentiation strategies, focus strategies, alliance strategies, diversification strategies, direct marketing strategies, etc. They are utilized for demand forecasting, advertisement, gauging the extent of customer satisfaction, analysis of the various macro-economic and micro-economic factors, etc. Some of the examples of Artificial Intelligence used for advertisements in companies are Asko, Pinterest, Zendesk, Asos, Kellogg, Staples, Amazon, Tumi, Wordsmith, Autodesk, etc. Studies reveal that in India today, only 20 per cent of the organizations have successfully implemented Artificial Intelligence systems (Bughin, McCarthy & Chui, 2017)⁵. It is very much important for the management to recognize the kind of Artificial Intelligence which would be best suited to their organizational system as the technology used is very sophisticated. There is a huge growth of the retail sector in India, especially the organized retail outlets. Big Bazar, Pantaloons, Reliance, etc, are some of the big names in this sector. These outlets receive thousands of customers daily in their centre and it would be highly beneficial for them if they would be able to jot down the details of these customers so that the marketing team can effectively tap into their system. This paper delves into the organized retail sector of West Bengal and tries to analyze the factors which have an impact on developing the marketing strategies with the help from Artificial Intelligence.

II. LITERATURE REVIEW

The customers of this generation are tech savvy. With the use of technology, they can generate an idea about the product features and its details within a matter of a few seconds. Hence, it is essential for the companies to understand the expectations of the customers to whom they are catering to. Artificial Intelligence can help the organizations to garner a better understanding regarding the expectations of the customers. With this, from the customer's point of view, the products that they are seeking might be easily available to them thus, ensuring marketing efficiency. Also, it will immensely help them to shop in a hassle free manner resulting in frictionless shopping experience.



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This would result in both customer loyalty as well as building customer satisfaction (Riter, 2017)⁶. There is an existence of a positive correlation between that of implementation of Artificial Intelligence with that of the rendering of effective and quality decision making (Saleh & Abdullah, 2009)⁴. It is highly imperative for the managers to use the tools and methods of Artificial Intelligence while rendering decisions as multiple factors needs to be considered in order to come to a definite conclusion. Also, the administrative officers need to be emotionally resilient in order for them to come to correct decisions. Hence, Artificial Intelligence solves this error as human intelligence could be applied while making a decision without bringing in the complexities of the human emotions which might increase the chances of making a mistake. Thus, the quality of the decision making would be higher in case an Artificial Intelligence is used as compared to other traditional methods like resorting to the advice of experts in that particular domain. However, it must be kept in mind that time is crucial and often times, the decision needs to be made fast. In times like these, Artificial Intelligence can be used as a tool to make decisions which could help in boosting the profitability of the organizations. Artificial Intelligence is very much helpful in the detection of the patterns of the data generated by the user content deployed by the firms. The organizations define the problem for which they want to gather data and the data analysis is also chalked out well in advance. This data is collected and subsequently analyzed by Artificial Intelligence in order to forecast the behavior of the users in the near future. Thus, the problem is quickly solved in a matter of moments by Artificial Intelligence (Sukhraj, 2017)⁷ and it comes up with various alternative situations which can be implemented by the firm. Artificial Intelligence can also go through the user's comments about their products and as a result, they can analyze their personality characteristics which could further provide intel on the "best" customers. Artificial Intelligence can gather information and analyze it in order to generate various promotional ideas which are effective. It can help a firm to draw a conclusion to important decisions like whether targeted ads are the need of the hour or non-targeted ads will do (Arslan & Telang, 2015)⁸. However, targeted advertisements should not destroy the privacy of the consumers as this can backfire on the company (Lancefield, Ambler, Rauber & Patel, 2011)⁹. Thus, Artificial Intelligence could help in the creation of a better user experience through the help of personalization and also barring the invasion of privacy of the consumers. This could be done with the help of Artificial Intelligence. Post Purchase services are a vital part of the service industry as it reinforces the customer satisfaction regarding a particular product. This might also result in generating word of mouth advertisements which would further help the organizations (Kietzmann & Canhoto, 2013)¹⁰. Artificial Intelligence could help in identifying the customers who needs the post purchase services and help the organization in doing the follow up as well. Organizations today need to plan their marketing strategies in order to meet their product demand on a daily basis. The higher management is in charge of the development of these strategies to place their company in a good position in the future (Idris, et al., 2006)¹. Planning the

marketing strategies is not completed until and unless they are executed properly. Proper execution of these strategies results from the further growth and development of the firms which can be assisted with by Artificial Intelligence (Wheelen & Hunger, 2004)². There are various strategies that are very popular with the organizations today. Of course, the strategies are adopted according to the needs of the organizations (Kotler & Keller, 2006)³. The various strategies are overall cost leadership, differentiation, focus, alliance, diversification, direct marketing, etc.

III. HYPOTHESES AND RESEARCH MODEL

H1: 'Better Understanding Regarding Customer Expectations' through 'Artificial Intelligence' positively influences 'Development of Effective Marketing Strategies' in Organized Retail Sector.

H2: 'Efficient Decision Making' through 'Artificial Intelligence' positively influences 'Development of Effective Marketing Strategies' in Organized Retail Sector.

H3: 'Quick Problem Solving' through 'Artificial Intelligence' positively influences 'Development of Effective Marketing Strategies' in Organized Retail Sector.

H4: 'Generating Effective Promotional Ideas' through 'Artificial Intelligence' positively influences 'Development of Effective Marketing Strategies' in Organized Retail Sector.

H5: 'Facilitating Post-Purchase Services' through 'Artificial Intelligence' positively influences 'Development of Effective Marketing Strategies' in Organized Retail Sector.

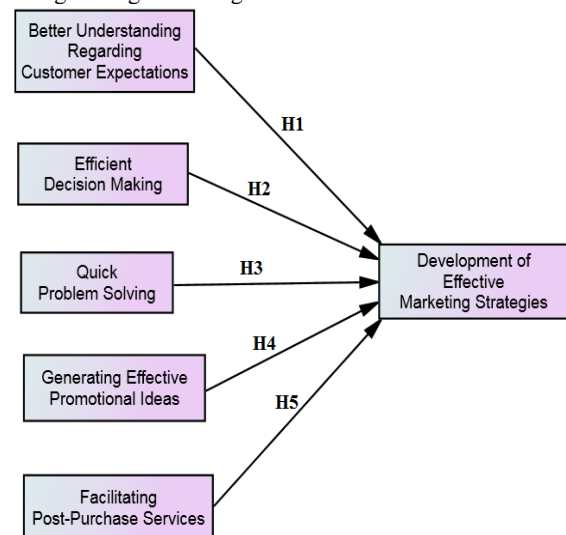


Figure 1: Hypothesized Research Model

IV. RESEARCH METHODOLOGY

In this research, secondary as well as primary data have been used to establish our model. For collecting primary data from Retail FMCG Sector in West Bengal, structured questionnaire (Annexure-1) with 5 Point Likert Scale has been prepared as a survey tool. We have tried to cover almost all the big organized retailers in West Bengal including Big Bazaar, Shoppers Stop, Spencer's Retail, Reliance Retail, Lifestyle. 127 responses from marketing and sales managers were collected through Convenience Sampling technique. Exploratory Factor Analysis (EFA) and Multiple Regression Analysis by SPSS-21 have been executed as per the research requirement. Our survey period was from May, 2019 to July, 2019.



V. DATA ANALYSIS AND RESULTS

A. Reliability Testing & Validity Testing:

Reliability of collected dataset has been checked by Cronbach's Alpha value (0.865) which was under acceptable range (>0.70). Also Exploratory Factor Analysis (EFA) has been executed for validity testing of dataset. Tolerable range of KMO value (0.802) with significant Bartlett's Test of Sphericity (Table: 1) proves Sampling Adequacy of dataset which supports the execution of EFA (Table: 2).

Table 1: KMO Measure of Sampling Adequacy and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.802
Bartlett's Test of Sphericity	Significance Level	<0.001

Table 2: Exploratory Factor Analysis by RCM

Factors	Variables	Factor Loading (>0.50)	Variance Explained (%)	Cronbach's Alpha
Better Understanding Regarding Customer Expectations	q2	.968	16.073	0.958
	q1	.957		
Generating Effective Promotional Ideas	q8	.947	15.896	0.965
	q7	.923		
Facilitating Post-Purchase Services	q9	.950	15.435	0.904
	q10	.925		

For checking relative influence of independent factors on the dependent factor, multiple regression analysis has been executed here. High R-Value (0.908) indicates that independent-variables and dependent variable are strongly correlated. Also highly significant R² value (0.824) indicates that 82.4% variance of 'Development of Effective Marketing Strategies' as the dependent variable can be properly explicated by all independent variables, present over here (Table: 4). After that, we have tested the hypothesis by checking significant Regression Coefficients from Table: 5.

Table 4: Summary of Regression Analysis (Model-I)

R	R-Square	Adjusted R Square	Std. Error of the Estimate	F-Value	Sig.	Durbin-Watson
.908	.824	.822	.382	657.92	<0.01	2.029

Note: Predictors: (Constant), Better Understanding Regarding Customer Expectations, Quick Problem Solving, Efficient Decision Making, Facilitating Post Purchase Services, Generating Effective Promotional Ideas
Dependent Variable: Development of Effective Marketing Strategies

Table 5: Regression Coefficients for Establishing Model-Equation & Hypothesis Testing

Quick Problem Solving	q5	.939	15.048	0.885
	q6	.933		
Efficient Decision Making	q4	.924	14.448	0.831
	q3	.907		
Development of Effective Marketing Strategies	q11	.812	11.078	0.884
	q12	.808		

Extraction Method: Principal Component Analysis, Rotation Method: Varimax with Kaiser Normalization.

We can easily segregate 6 factors with 'factor loadings' greater than 0.5 by the help of Principal Component Analysis and Varimax with Kaiser Normalization. On the other hand, 'Variance Inflation Factor' (VIF) values have been checked and found that all independent factors are Multi-co-linearity error-free because VIF values were less than 3 (Table: 3).

Table 3: Co-linearity Statistics

'Development of Effective Marketing Strategies' as dependent factor		
	Tolerance	VIF
Facilitating Post Purchase Services	.564	1.772
Efficient Decision Making	.587	1.703
Quick Problem Solving	.740	1.351
Generating Effective Promotional Ideas	.510	1.961
Better Understanding Regarding Customer Expectations	.571	1.751

Model-1	Un-standardized Coefficients		t-Value	Sig.	Hypothesis
	B	Std. Error			
(Constant)	-1.276	.105	-12.158	<0.01 ^{\$}	
Facilitating Post Purchase Services	.111	.020	5.549	<0.01 ^{\$}	H5 (S)
Efficient Decision Making	.226	.021	10.676	<0.01 ^{\$}	H2 (S)
Quick Problem Solving	.354	.025	14.124	<0.01 ^{\$}	H3 (S)
Generating Effective Promotional Ideas	.378	.025	14.863	<0.01 ^{\$}	H4 (S)

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Better Understanding Regarding Customer Expectations	.240	.019	12.991	<0.01 ^{\$}	H1 (S)
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Note: Dependent Variable: Development of Effective Marketing Strategies

\$ indicates 1% level of significance

(S)- specifies 'Hypothesis is supported'

Here, Regression Model-Equation has been set up as follows.

'Development of Effective Marketing Strategies' = (-1.276) + 0.240* (Better Understanding Regarding Customer Expectations) + 0.226* (Efficient Decision Making) + 0.354* (Quick Problem Solving) + 0.378* (Generating Effective Promotional Ideas) + 0.111* (Facilitating Post Purchase Services)

VI. TESTING OF HYPOTHESIS AND FINDINGS

H1: 'Better Understanding Regarding Customer Expectations' through 'Artificial Intelligence' positively influences 'Development of Effective Marketing Strategies' in Organized Retail Sector.

Significant P-value (<0.01) with positive (+.240) Regression co-efficient supported the hypothesis. Organized retail companies have to cater to thousands of customers on a daily basis. Artificial Intelligence helps them to better understand the customers so that the expectations of the customers could be met in a proper manner by development of various marketing strategies that are in synchronization with the needs and wants of the customers.

H2: 'Efficient Decision Making' through 'Artificial Intelligence' positively influences 'Development of Effective Marketing Strategies' in Organized Retail Sector.

Significant P-value (<0.01) with positive (+.226) Regression co-efficient supported the hypothesis. Artificial Intelligence effectively monitors the organized retail sector daily so that problems can be identified and quickly solved. Also, the data is stored in the Artificial Intelligence system so that recurrence of similar problems could be dealt with promptly. Artificial Intelligence also helps in the improvement of the quality of the decision making as multiple factors are analyzed simultaneously without the interference from the emotional variables which further assists in the development of marketing strategies which would be most fruitful for the organizations.

H3: 'Quick Problem Solving' through 'Artificial Intelligence' positively influences 'Development of Effective Marketing Strategies' in Organized Retail Sector.

Significant P-value (<0.01) with positive (+.354) Regression co-efficient supported the hypothesis. Organized retail sector face many customer complaints as a huge number of customers are catered to within a short period of time. Marketing strategies must be developed to deal with this complaints and if possible, stopping the propagation of this

problem. However, some problems are inevitable and as a result Artificial Intelligence helps the firms to prepare certain contingency measures in case these problems do occur and also, in some cases, predictions are made that some problems could occur in the near future. In such cases, marketing strategies are made and implemented in order to avoid these problems.

H4: 'Generating Effective Promotional Ideas' through 'Artificial Intelligence' positively influences 'Development of Effective Marketing Strategies' in Organized Retail Sector.

Significant P-value (<0.01) with positive (+.378) Regression co-efficient supported the hypothesis. Promotion is one of the primary constituents involved in marketing without which many of the marketing strategies will not be functional. Marketing strategies regarding promotion is responsible for creating the awareness of the products in the market. In case of the organized retail sector, Artificial Intelligence help the firms to figure out the merchandising of their products based on the demand as well as stocking the products on time so that the demand could be met efficiently.

H5: 'Facilitating Post-Purchase Services' through 'Artificial Intelligence' positively influences 'Development of Effective Marketing Strategies' in Organized Retail Sector.

Significant P-value (<0.01) with positive (+.111) Regression co-efficient supported the hypothesis. Artificial Intelligence also facilitates the Post Purchase services based on the purchase history of the customers. Marketing strategies are developed through the help of Artificial Intelligence by the analysis of this feedback data which is gathered after purchase from customer.

VII. IMPLICATIONS OF THE STUDY

Market trends are shifting towards organized retail sector wherein all the products are available under one roof. People are very busy nowadays and hence, visiting the supermarkets or the departmental stores are more efficient for them rather than going through a number of shops. However, with the propagation of the organized retail sector, planning of marketing strategies have become very crucial for them. Artificial Intelligence helps the firms to develop various marketing strategies by collecting and analyzing the data from the thousands of customers visiting the organized retail stores. It is beneficial for the customers as they get to see thousands of products which are on display and they get to choose the product which they want to buy according to their need. Also, through the help of various promotional events which are carried out, they get to provide their valuable feedback which is again taken very seriously by the firms and if possible, incorporated in their products. From a societal point of view, many employment opportunities are generated by these firms. This gives a boost to the economy of the nation as well. Also, various handloom industry and other niche areas could be properly represented under such organizations as they are given a platform to showcase their variable products.

The availability of these products is ensured at all times and even the companies try to boost their sales as because they belong from a niche market. Quality is ensured all the time as customer satisfaction is very important for these firms as they depend on the word of mouth marketing spread by them. Services are given in a prompt manner in order to ensure that the customer returns to this outlet again and again. If the customers are satisfied, it will automatically result in an increase in the profitability of the firms.

VIII. CONCLUSION

Organizations are looking for new and innovative technology to improve their processes. One of the most sought after technology in today’s world is Artificial Intelligence. It is such a technology which takes into account the human intelligence and gives the results accordingly. It caters to a wide array of functions which makes it highly productive to have around. Organized retail sector is facing many challenges to cater to a diversified customer base at a stipulated period of time. As a result, they are adopting Artificial Intelligence to perform tasks which are very much essential for the operation of a retail store. It helps in gathering of the data as well as analyzes it in order to come up with certain innovative marketing strategies which would target the needs and wants of the customers. Various types of marketing strategies could be determined to focus on the growth of the organizations. Also, these decisions are crucial for stocking of the products in the retail outlet so that there is no shortage in the future. This paper tries to identify the factors that have a direct impact on the development of the marketing strategies which results from the usage of Artificial Intelligence. As a result, it is observed that Artificial Intelligence is a tool which, if implemented judiciously, could result in doing a wide range of activities for the organization.

ANNEXURE: 1

Factors	Questionnaire with Various Items / Variables
Better Understanding Regarding Customer Expectations	Q1: Artificial Intelligence can help in improving the accessibility of the products in the retail store.
	Q2: Better understanding regarding the customer expectations by using Artificial Intelligence has a positive impact on the development of effective marketing strategies of a retail store.
Efficient Decision Making	Q3: Artificial Intelligence helps to give quality decisions within a stipulated period of time.
	Q4: Efficient decision making by using Artificial Intelligence has a positive impact on the development of effective marketing strategies of a retail store.
Quick Problem Solving	Q5: Artificial Intelligence helps to quickly identify the problem in a

	retail store and consequently solve it.
	Q6: Quick problem solving by using Artificial Intelligence has a positive impact on the development of effective marketing strategies of a retail store.
Generating Effective Promotional Ideas	Q7: Generating effective promotional ideas by using Artificial Intelligence has a positive impact on the development of effective marketing strategies of a retail store.
	Q8: Artificial Intelligence helps in protecting the privacy of the customers’ information in a retail store.
Facilitating Post-Purchase Services	Q9: Artificial Intelligence helps in the delivery of the Post Purchase services to the customers.
	Q10: Facilitating Post Purchase Services by using Artificial Intelligence has a positive impact on the development of effective marketing strategies of a retail store.
Development of Effective Marketing Strategies	Q11: Development of effective marketing strategies by using Artificial Intelligence helps to meet the demand of the market.
	Q12: Development of effective marketing strategies by using Artificial Intelligence helps in better execution of the plans.

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