



Vol. 1, No. 1; Jan – Mar (2022)

Quing: International Journal of Innovative Research in Science and Engineering

Available at <https://quingpublications.com/journals/ijirse>



Prediction of Customer Preference Marketing Strategy in E-Marketing using Data Analytics Method



S. Dhivya*

Asst. Prof., Department of Computer Applications, Kongu Arts and Science College (Autonomous), Erode, TN, IND.

Dr. T. A. Sangeetha

Head and Asso. Prof., Department of Computer Applications, Kongu Arts and Science College (Autonomous), Erode, TN, IND.

ARTICLE INFO

Received: 09-02-2022

Received in revised form:
21-03-2022

Accepted: 23-03-2022

Available online:
30-03-2022

Keywords:

Data-Mining;
Classification;
E-Commerce;
Marketing;
Consumer;
Preference.

ABSTRACT

Recently most of the merchants can sales their product through E-marketing to achieve their marketing goal. E-marketing company has used various E-marketing strategies to making an interest to the customer to buy a product. In existing methodology mostly customer can choose the product based on customer rating. Recently apart from customer rating user can prefer the various marketing strategies to buy a product. Data mining is the process of extract the information from huge data set. Classification is a technique to classify the data which is belongs to a given dataset. In the classification techniques used some constraints to classify the given data into different classes. Some major kinds of classification algorithms such as k-nearest neighbour classifier, Naive Bayes, Support Vector Machine are used for classification. While considering these approaches, analyse the development of E-marketing through E-commerce Company using data mining classification techniques to analyse this study. Nowadays E-Commerce companies can learn more about their customers to develop more effective marketing strategies so for increase sales and decrease costs. The main goal of marketing is to reach more customers through the channels where they spend their time reading, searching, shopping, and socializing online.

© 2022 Quing: IJRSE, Published by Quing Publications. This is an open access article under the [CC-BY 4.0 license](https://creativecommons.org/licenses/by/4.0/), which allows use, distribution and reproduction in any medium, provided the original work is properly cited.

DOI: <https://doi.org/10.54368/qijirse.1.1.0008>

1.0 INTRODUCTION

Nowadays most of the E-Commerce companies are available in this competitive world. In existing method, the product can be sales to the customer in two ways. First one is the retail marketing; from this approach a customer can go and buy a product from the retailer. Second approach is that the product can be sales to the customer directly in their place. Now the advance technologies of E-Marketing can be used to sale their product by online. Many E-Commerce companies are sales their product by providing ads and provide service based on customer

* Corresponding author's e-mail: s.dhivya87@gmail.com (S. Dhivya)

preference. It also used to increase brand awareness to the product company. Based on customer reviews and analyse the sales report can give the current marketing demand to the product company. Examples of some E-marketing Companies are amazon, Walmart, eBay, Target, Flipkart and NewEgg.



2.0 FEATURES IN E-MARKETING

- **Accessibility:** Through this E-marketing user can buy a product everywhere in the globe. It is a user-friendly approach to search and prefer the product based on marketing strategies. The fraudulent data can be identified easily in online marketing. Sometimes malicious merchants attempt to market their items and insert fake reviews and feedbacks. In this study (Weng *et al.*, 2019) used e-commerce fraud detection system, CATS to detect the frauds in various e-commerce platform.
- **Interactive:** Main aspect in the digital marketing is customer interaction. Every E-marketing company gets the customer feedback to improve the marketing strategies. Recently most of the customer prefers the feedback comment to select the best product in the market. At present some E-Commerce handles the notification system to reach the product importance and features to the customer. In this study (Chauhan *et al.*, 2019) deals with Some E-Commerce provider use recommender system. This system coupled with push notifications to help customers to find a best product and assess reviews and then provide suggestion to improve the notification system in future.
- **Deal with Big Data:** Dealing with large data is a biggest challenge in E-marketing. Nowadays E-Commerce use latest terminologies to collect a data from various customers. It can be used to analyse and generate the report in future.
- **Cost-Efficient:** In E-marketing, merchants can get benefit in cost wise because advertisement cost is very low compared to other marketing strategies.

3.0 E-MARKETING APPLICATIONS

E- Commerce technology can use in many places like Finance, Manufacturing, Auctioning, Marketing, Online Shopping, Mobile and Web Applications and Online Booking.

3.1 Finance

E-commerce plays an important role in finance sector. Banks use e-commerce to provide facility of online banking service such as money transfer, bill payment, etc. Stock market use e-commerce for online stock trading.

3.2 Manufacturing

In manufacturing e-commerce role is to execute the goods electronically. Group of companies carry out their goods manufacturing exchange with the support of e-commerce techniques.

3.3 Auctioning and Marketing

Using e-commerce for auctioning is to make user friendly approach for all to auction in anywhere. Recently most of the merchants can use e-commerce technology to market their product and achieve higher end sale.

3.4 Online Shopping

Online shopping provides various features to the customer to shop an item within short time. It is convenient and user-friendly approach for the customer to order a product in less time with effective cost.

3.5 Mobile and Web Applications

Most of the consumer can purchase product through mobile or web applications. This mobile or web application have user friend features and payment security through safe payment options.

3.6 Online Booking

E-commerce plays an important role in online booking mechanism. Through this online booking, people can book their transport tickets, book hotels and tourism packages from everywhere in the globe.

4.0 RELATED WORKS

Analyse the large volume of E-Marketing data by manually is a tedious process to get exact accuracy of result. In such a case using data analytics method to give the best prediction or accuracy by analysing large data set. Now a day's customer not prefers the oral feedback methodology about the product because of different aspect of oral reviews, the customer cannot able to take right choice to buy a best product. Recently use various data analytics method to analyse online customer review to get best result. In (Choudhary and Choudhary, 2018) used sentiment analyse method to analyse the customer reviews collected from twitter to choose the best mobile brand.

Recently most of the customers prefer the E-commerce site to buy a product. Most of the E-Commerce sites get star rating from the customers. Based on the star rating the seller analyses the customer behaviour about the product and it's used to further release in future. Sometimes the star rating is not sufficient to take correct choice of decision because high star rating product has poor customer text reviews such a case having trouble to choose best product. The study (Rahardja *et al.*, 2019) used text mining approach and use K-medoid algorithm to analyse the customer reviews. Here used sentiment analyses concepts on large dataset to analyse the customer reviews.

Mostly the sentiment analyses are used to take a correct choice of decision in e-commerce technology. In this study (Bayhaqy *et al.*, 2018) analyse the customer twitter reviews used Decision Tree, K-NN, and Naïve Bayes Classifier approaches to find the best accuracy.

Now a day's e-commerce websites are very important platform to carry out their business. Website evaluations facing many challenges because of explosive growth of analyse large data set. Recently in this study (Alazab *et al.*, 2018) used data analytics method to analyse the user's behaviour on the website and predict the user involvement in the website.

In existing methodology, customer interest can be predicted by product rating. Product rating does not give the accurate review about the product because of different customer give different rating to the product based on their usability.

Sometimes merchants announce discounts and cash coupons on some special days to get new buyers. On that time many of the buyers are one time hunter, that buyers are not guarantee to buy a product again from same merchants. In this study (Zhao *et al.*, 2019), in order to find what the new buyers are become a loyal customer using data analytics method to predict the accuracy however that the new buyer would purchase item from same merchant again within six months or one year.

The study of (Esmeli *et al.*, 2020) Purchase prediction can help to the e-marketing companies to predict the stock and special offers in day-to-day transaction. This study used Word2Vec model to predict the purchase recommendations.

In the study (Zhang *et al.*, 2020) analyse consumer reviews to improve the sales target in e-marketing. Every consumer gives their own reviews in different aspects based on product usage and their opinion. This study used sentiment analysis method to analyse their different aspect of reviews.

The study of (Zhang and Zhong, 2019), analyse the customer reviews into two categories namely direct trust, and propagation of trust. In this first method analyse consumer reviews based on sentiment similarity features, second method used transitivity feature to analyse. The result of this study reported as that the sentiment analyse is a best method to analyse the consumer reviews.

5.0 PROPOSED WORK

Every customer uses their own preference to buy a product through E-marketing. Customer can prefer the any one of the following marketing strategies to choose the best product.

5.1 Customer Feedback

Nowadays all e-marketing companies can collect the customer feedback for their product. In this feedback mechanism every customer provides their positive and negative feedback about the product. It is useful to the merchants can easily identify product usage in customer point of view to improve their sales.

5.2 Discount and Coupons

In this competitive business world, every merchant can introduce any one of the business tricks to improve their marketing. Sometimes provide discount to their product under the terms for move the old stock, provide discount for new release, discount for particular product to reach high sales percentage within a period and discount at the month end or year end. Sometimes provide coupons to create more impact at customer point of view to buy a product.

5.3 Payment Offer

Most of the E-Marketing companies provide payment offer to achieve their marketing goals. Provide payment offers for instalment basis, provide credit Points to the customer for bank prepaid card usage.

5.4 Marketing Ads

Recently most of the merchants provide marketing Ads to reach the usage and benefit of their product through telecommunication media or provide add in web application.

In this study analyse the customer preference marketing strategies which are used to improve their sales. Data mining classification techniques used to classify the marketing strategies into five classes.

Class A - Customer Feedback

Class B - Discount

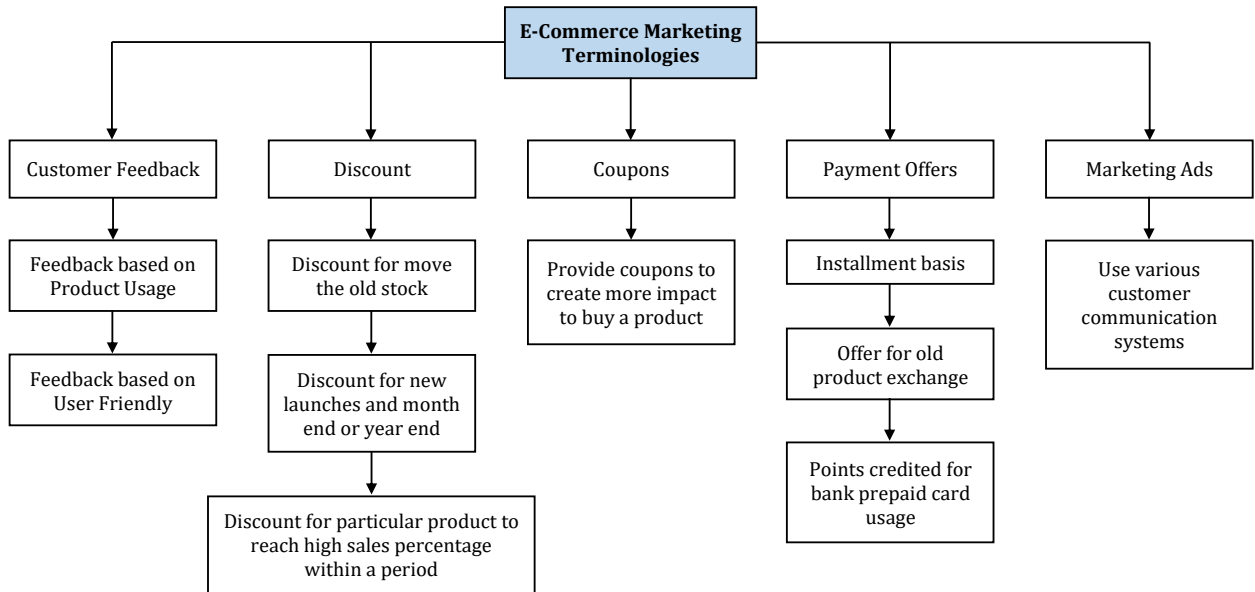
Class C - Allow Coupons

Class D - Payment Offers

Class E - Marketing Ads

In E-Marketing technologies E-Commerce Company can monitor day- by- day sales and also analyse which marketing strategies are used to improve their sales.

Flow graph Representation of E-Marketing Terminologies



In this study collected real data from 50 customers. Every customer selected a product by their own preference. In this study identified most of the customer prefers customer feedback strategies to select their product.

Customer Preference

Customer Feedback	16
Coupons	8
Discount	8
Marketing Ads	13
Payment Offer	10

In this proposed method using python-displot method to represent the ranking of customer preferences.

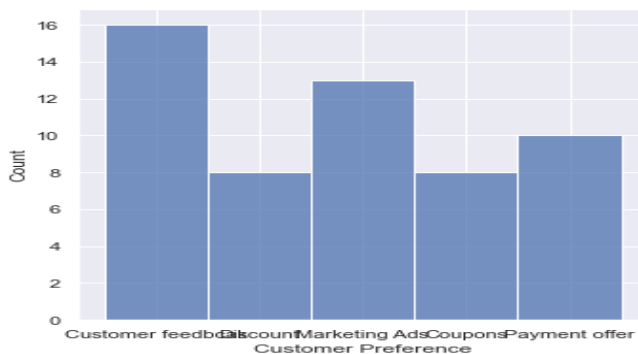


Figure 1 – Customer Preference Marketing Strategy using Python-displot



Figure 2 – Classify Customer Preference Marketing Strategy using Python-Stripplot



Figure 3 – Classify Customer Preference Marketing Strategy using Python-swarmplot

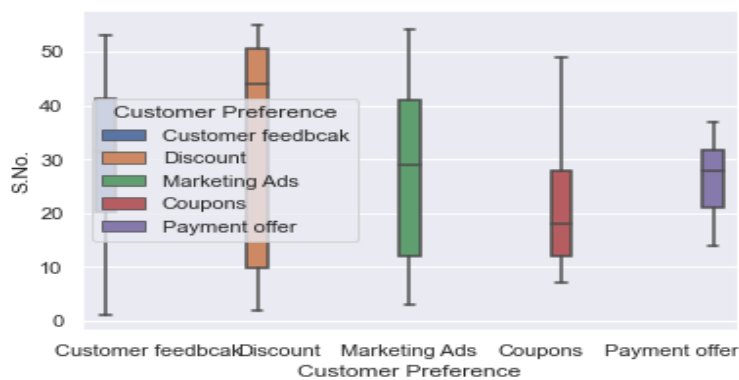


Figure 4 – Classify Customer Preference Marketing Strategy using Python-boxplot

6.0 RESULTS AND DISCUSSION

Classification is the most important techniques in data analysis. In E-commerce technology data analytics play an important role to analyse day-to-day transaction and stock marketing data. From the customer point of view most e-marketing companies provide user friendly aspects to make an interest to involve online purchasing. All over the globe, merchants prefer the e-marketing strategies to reach their product usage to the customers in short time periods. Results of this study

gathered real data from customers and analyse that data using classification methods to classify user preference marketing strategy.

7.0 CONCLUSION

In E-marketing, merchants can understand customer demand in this competitive world and easily make a transaction within short range period. From this e-marketing customer can analyse the product based on online reviews and annotations then choose best product in cost wise and quality wise. In this study analysed customer preference marketing strategy, it is used to the e-marketing companies to improve their marketing strategies in day-to-day aspects. In future will collect customer preference marketing strategy from various e-marketing companies to identify which is the most user preference marketing strategy in the global level.

REFERENCES

- Alazab, A., Bevinakoppa, S., & Khraisat, A., (2018) "Maximising Competitive Advantage on E-Business Websites: A Data Mining Approach", Published in: *2018 IEEE Conference on Big Data and Analytics (ICBDA)*, pp. 111-116. <https://doi.org/10.1109/ICBDA.2018.8629649>.
- Bayhaqy, A., Sfenrianto, S., Nainggolan, K., & Kaburuan, E. R., (2018) "Sentiment Analysis about E-Commerce from Tweets Using Decision Tree, K-Nearest Neighbor, and Naïve Bayes", Published in: *2018 International Conference on Orange Technologies (ICOT)*, pp. 1-6. <https://doi.org/10.1109/ICOT.2018.8705796>.
- Chauhan, G., Mishra, D. V., Begam, F. M., & Akhila, (2019) "Customer-Aware Recommender System for Push Notifications in an e-commerce Environment", Published in: *2019 Global Conference for Advancement in Technology (GCAT)*, pp. 1-7. <https://doi.org/10.1109/GCAT47503.2019.8978330>.
- Choudhary, M., & Choudhary, P. K., (2018) "Sentiment Analysis of Text Reviewing Algorithm using Data Mining", Published in: *2018 International Conference on Smart Systems and Inventive Technology (ICSSIT)*, pp. 532-538. <https://doi.org/10.1109/ICSSIT.2018.8748599>.
- Esmeli, R., Bader-El-Den, M., Abdullahi, H., (2020) "Using Word2Vec Recommendation for Improved Purchase Prediction", Published in: *2020 International Joint Conference on Neural Networks (IJCNN)*, pp. 1-8. <https://doi.org/10.1109/IJCNN48605.2020.9206871>.
- Rahardja, U., Hariguna, T., & Baihaqi, W. M., (2019) "Opinion Mining on E-Commerce Data Using Sentiment Analysis and K-Medoid Clustering", Published in: *2019 Twelfth International Conference on Ubi-Media Computing (Ubi-Media)*, pp. 168-170. <https://doi.org/10.1109/Ubi-Media.2019.00040>.
- Weng, H., Ji, S., Duan, F., Li, Z., Chen, J., He, Q., & Wang, T., (2019) "CATS: Cross-Platform E-Commerce Fraud Detection", Published in: *2019 IEEE 35th International Conference on Data Engineering (ICDE)*, pp. 1874-1885. <https://doi.org/10.1109/ICDE.2019.00203>.
- Zhang, S., & Zhong, H., (2019) "Mining Users Trust from E-Commerce Reviews Based on Sentiment Similarity Analysis", in *IEEE Access*, 7, pp. 13523-13535. <https://doi.org/10.1109/ACCESS.2019.2893601>.
- Zhang, S., Zhang, D., Zhong, H., & Wang, G., (2020) "A Multiclassification Model of Sentiment for E-Commerce Reviews" in *IEEE Access*, 8, pp. 189513-189526. <https://doi.org/10.1109/ACCESS.2020.3031588>.

Zhao, B., Takasu, A., Yahyapour, R., & Fu, X., (2019) "Loyal Consumers or One-Time Deal Hunters: Repeat Buyer Prediction for E-Commerce", *Published in: 2019 International Conference on Data Mining Workshops (ICDMW)*, pp. 1080-1087.
<https://doi.org/10.1109/ICDMW.2019.00158>.