

Machine Learning Based Prediction of Consumer Intention to Buy E-Grocery in India

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Abstract:- E-Grocery market of India has been growing tremendously since last few years. The online buying pattern and social influence have been a great impact on spending nature. The consumer intention to buy any product varies considerably. Though FMCG e-Grocery seems to be new in the India, the specialist needed more attention and extensive studies about it. Hence, this paper is aiming to adopt computational technique of machine learning to understand and verify the factors that affect the shoppers' intentions to buy grocery on-line in India. Both qualitative and quantitative results establish the importance of situational factors, such as having a baby or developing health problems, as triggers for starting to buy groceries online. Many shoppers are found to discontinue online grocery shopping once the initial trigger has disappeared or they have experienced a problem with the service.

Keywords:- E-Grocery Website, Order Pickup, Online-Shopping.

I. INTRODUCTION

Online shopping is getting super famous for a huge number of reasons. There are definitely external factors such as rising fuel cost, difficulty accessing regular stores and problems that are usually linked with supermarkets and other general stores to help to the increase in online shopping interest. Consumers can find out more about the product and its updates from existing users. If one wants to buy a product, one should not just ask friends and family since there are lot of products reviewed on the internet that give feedback to current product users.

Online shopping sites show a huge number of best-quality and soft quality products that keep in mind people. The project is a web application which is used to order the daily grocery's we use in our real life. This helps the customers to buy the groceries in fingertips with a easily understandable user interface, any person very new to the website can understand the navigation easily and correctly. The website is made using PHP, HTML5 Stack and using warp server to simulate the MySQL server and establish the connection between the frontend and backend. The user-friendly interface is very easy to understand by any user who visits the website.

A. FMCG:

The full form of FMCG is Fast Moving Consumer Goods. FMCG relates to products in the market sold quickly and at a reasonably low price. These are usually not long-lasting and are also regarded as CPG (Packaged Goods for Consumers). Some examples of FMCG products include meat, vegetables, dairy products, fruits, processed foods, soft drinks, cosmetics such as soaps, deodorants, lip balm, eyeliner and everyday use products such as toilet paper and soaps, shower cap, face towel, over the counter drugs and other consumer products. Machine.

B. Machine learning:

The Machine Learning System reads historical data, builds speculation models, and when it finds out new data, predicts its output. The accuracy of this output depends on the amount of data, as large amounts of data help to create a better model that predicts output more accurate and clear. A machine engineer connects that systematic data to the models defined by the data scientists they work with. In addition, machine learning engineers are also developing algorithms and developing systems that allow machines, computers, and robots to process incoming data and identify patterns.



Fig 1

C. Prediction:

Prediction is a forecast, but not just about the weather. The word Pre means "before" and the dictionary is related to speaking. Thus, the forecast is a statement about the future. Guessing, sometimes based on facts or evidence, but not always. All fortune of the tellers makes their predictions using crystal balls. A meteorologist uses scientific data and maps to tell us about the probability of rainfall, snow, or temperature. And when I made a prediction that you would understand what the word meant, it was based on a natural notion, a gut feeling telling me what was going to happen next.

D. Machine Learning Algorithm approach:

The algorithm used in the project is about optimizing contains the $O(n)$ complexity in most cases, which are the best things for time complexity. The project is being made then some problems arise, solving them depends on the methodology used to lead to the solution. As we are using agile for this project the proper communication and sync up calls lead to solve the issues that came across easily. The communication about the issues, status and the progress of the completion of the work defines the process of solving the issues and problems. Instead of dumping all the modules at a time, build the website in a way by preparing the schedule of what to do and when to do. The sprints went well and this process helped to solve the issues. In the same manner the algorithms for the modules are created and implemented.

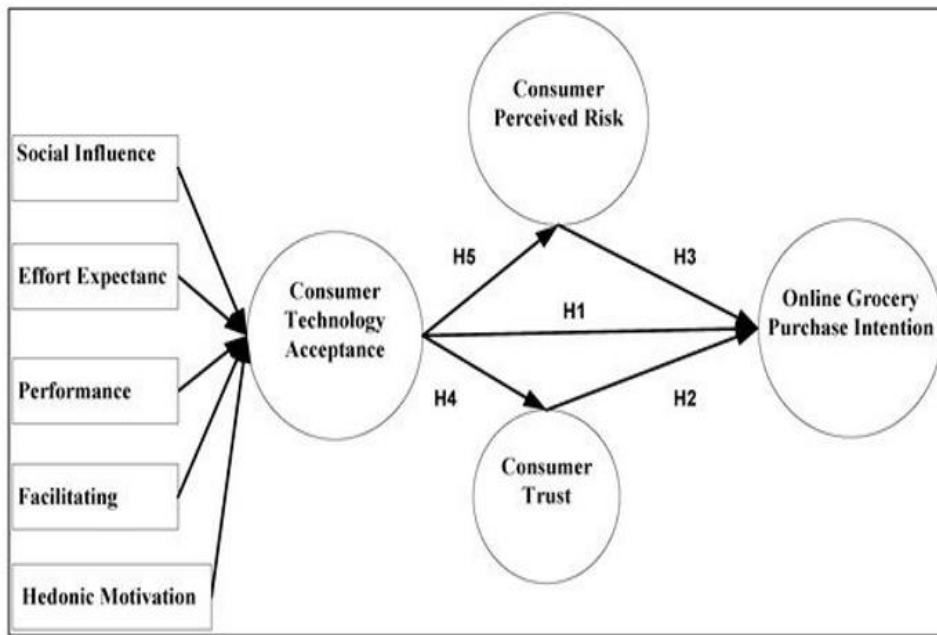


Fig 2

II. METHODOLOGY

In project we aim at creating a system to take attendance using facial recognition Technology in classrooms and creating an efficient database to record them. Simply, Machine Learning permits PCs to 'learn'. Generally, we generally got PCs to get things done by giving an exacting arrangement of directions. AI utilizes a totally different methodology. Rather than giving the PC a lot of guidelines on the most proficient method to accomplish something, we give it directions on the best way to figure out how to accomplish something.

In this paper we work on these modules are:

- Machine learning
- Deep learning
- TensorFlow
- Neural Network
- Random Forest

A. Machine learning:

Machine Learning is a learning field that gives computers the ability to learn without preconceived notions. Machine Learning is one of the hottest technologies one country has ever encountered. As can be seen from the name, it provides a computer that makes it very similar to human.

B. Deep learning:

In-depth learning is a form of machine learning in which a computer analyzes algorithms and their results in order to "learn" ways to develop new processes and create new ones. An in-depth study program contains a series of levels.

C. TensorFlow:

TensorFlow is a free and open source software for machine learning and artificial intelligence. It can be used for a wide range of activities but focuses on training and understanding deep neural networks.

D. Neural Network:

A neural network is a network or circuit of biological neurons, or, in a modern sense, an artificial neural network, made up of artificial neurons or nodes. Therefore, a neural network may be a biological neural network, composed of biological neurons, or a synthetic neural network, used to solve artificial intelligence (AI) problems.

E. Random Forest:

A random forest is a method used to illustrate predictions and behavioral analysis and is built on decision trees. It contains many decision trees that represent a unique example of data fragmentation in a random forest.

Before buying, people often seek the advice and opinions of family members or former buyers. It could be found that the information that Indian consumers receive from everyone around, in any form and manner, has a profound effect on their decision to buy. Digital risk and customer trust are some of the key areas of online shopping forums. The impact of Corona Pandemic will be felt in the future months. Online grocery shopping forums should take into consideration the fact that today's consumers are very concerned about the perceived risk and reliability associated with the adoption of technology. As the number of online scams and fear about privacy and security have grown, online forums need to explore ways to gain customer belief and trust. In order to diminish consumer risk and gain their trust, these forums must focus on their effective and secure delivery, nicely display product price and quality, use a simple and straight forward visual interface to avoid customer confusion and reduce their effort, and promote campaigns. To bring more buyers and provide relevant information.

III. RESULTS & DISCUSSION

For every task we do and for defect we fix, for every feature we add we need the result. The result can give us an outcome or an idea to fix, this thing helped very well in this project and lead to a perfect outcome as expected. The results play a main role to boost up your ideas and help to reach the goal. The managed plan has been played main role to achieve the good results.

Discussion has been made weekly, the mentor has helped us in giving suggestions and approach to solve the issue and use different techniques to achieve the results. The proper communication can help the discussion more interesting in the technical terms, the sync ups are the main things for the issue discussion and solving them using better approach finalized after a discussion.

IV. FUTURE WORK

Selecting language for good understanding. It would also need to know how many customers repeat customers are which purchase on regular basis, with which they can develop smart algorithms to predict their needs ahead of time.

In future we can add more enterprises and classes to increase the security of the project time you can use some third-party APS to trigger the emails and notifications which can be sent to the user and also about the delivering it can also integrate other payment things which are enabling the net banking internet upi and credit and debit card transactions also interested in having some specific wallets we can also introduce the wallets in the future to the project. Apart from the payments which we can also had a delivery tracking with online GPS when the product is out for delivery so that customer can easily able to track like some of the delivery systems Zomato and swiggy.

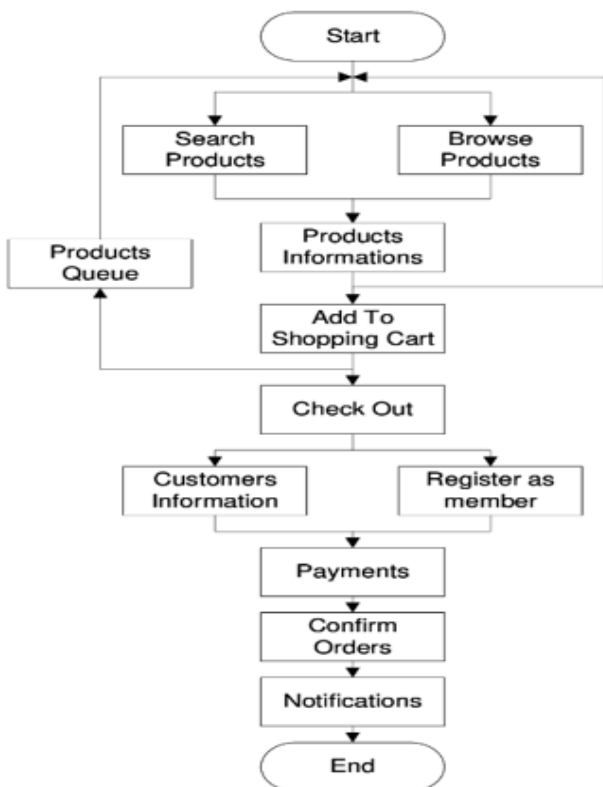


Fig 3

F. Implementation:

According to the recent data, the emergence of this epidemic has brought about changes in consumers perceptions about purchasing without cash or even going out. Because of the importance and diversity of pleasure motives in the online use experience, a company's retailing strategies should be taken very seriously when deciding on website design and planning for social media and online strategies; this is especially important in the present state of communication. Even in online application processes those have highly targeted to achieve the purposes of the tools. Online wholesalers should focus in promoting marketing strategies that improve consumer purchasing needs by providing several other shopping options, especially many policies that help the consumers gain confidence in the online system and improve consumer trust in the online shopping system. In fact, great motivation, simple circumstances, and social impact are all factors influencing consumer purchasing decisions in the country.

Also, we can add some authentication things while login in and also integrated some Google API for authenticating using the Google authenticator and also, we can introduce so many things to improve the security which can be updated in the future in latest. The way US designing can be improvised more in the coming days it requires a good team with good set of knowledge on the designing where they can help in impressing the designs and make look and feel very well.

V. CONCLUSION

Concluding the results, we see that people are not happy and consider it a good thing sometimes. People suffer because of its bad effects and are very hostile. They choose according to tradition methods over this new technology. As the population grows companies and markets it grows day by day. So, people place threats of cheating, fraud, transactions, etc. In fact, people do not really think that they can be trusted purpose. So, we can clearly conclude that traditional shopping is better than online to buy. This project helps in expanding business. Saves a lot of time for client's customers whoever visits the store. Merchant convenience and saving merchant's time for other customers. Knowledge gained by the students by building a project and interacting with team members and mentor can help in improving the communication skills and completion of project helps in improving domain knowledge.

REFERENCES

- [1]. The Virtual Online Supermarket: An Open-Source Research Platform-Experimental Consumer Research, April 21.
- [2]. H. Saleem, K. B. Muhammad, A. H. Nizamani, S. Saleem and J. Butt, "Data Science and Machine Learning Approach to Improve E-Commerce Sales Performance on Social Web," International Journal of Advanced Research in Engineering & Technology (IJARET), ISSN: 0976-6499, Scopus Indexed, HEC Recognized "Y" Category Journal, vol. 12, no. 4, pp. 401-424, 2021.
- [3]. Machine Learning: Algorithms, Real-World Applications and Research Directions,[2021], Iqbal H. Sarker ,SNComputer Science volume 2, Article number: 160 (2021)
- [4]. 'Data Science and Machine Learning Approach to Improve E-Commerce Sales Performance on Social Web, April 2021 | 12(4):401-424 DOI:10.34218/IJARET.12.4.2021.040
- [5]. Supermarkets of the future: deploying AI in your grocery store, By Nadejda Alkhalidi, Innovation Analyst, Published on May 7, 2021
- [6]. Data Science Use Cases in Retail Industry | Mayur Badole — May, 2021
- [7]. 'How Zomato Uses Machine Learning | Zomato saw 3x improvement in its 'feature store' service compared to last year | By Amit Raja Naik | Published on August 20, 2021 in Opinions.
- [8]. Are AI Technologies Paving a New Path for Food Retail? | 2020 | India
- [9]. Grocery Prediction using Machine Learning, ISSN 2321 3361 © 2020 IJES, Neha Kumari, Department of CSE, VIT University Chennai Campus, India. 2020
- [10]. How ML/AI is revolutionizing grocery delivery service |Ravi Chandra| Aug 2020, India
- [11]. 'How Data Science and AI are changing Supermarket shopping', Richard Farnworth [2020], Adelaide, Australia.
- [12]. Anatomy of Understanding Consumer Behavior When Grocery Shopping in the New Next 2020.
- [13]. J. Leek, "The key word in "Data Science" is not Data, it is Science," SimplyStats, 2013. [Online]. Available: <https://simplystatistics.org/2013/12/12/the-key-word-in-data-science-is-not-data-it-is-science/>. [Accessed 2019].
- [14]. 'How Grocers Are Reimagining the Future With AI?' | By Amanda Baltazar on Jan., 2019.
- [15]. Online Grocery Shopping and Consumer Perception, Feb 2018
- [16]. A Study on Consumers acuity towards online grocery shopping, December 2017
- [17]. Online grocery shopping: the key factors influencing consumers' purchase intention, May 2017
- [18]. Web Content Analysis of Online Grocery Shopping Web Sites in India, March 2016
- [19]. Park, A. C. W., Iyer, E. S., Smith, D. C., Iyer, E. S., & Smith, D. C., 2016. The Effects of Situational Factors on In- Store Grocery Shopping Behavior: The Role of Store Environment and Time Available for Shopping. Journal of Consumer Research. 15(4),422-433.
- [20]. Retail, G. T., & Survey, C., 2015. Total Retail 2015 (February). Statistica. (2016). ECommerce. Retrieved June 26, 2016, from [\(https://www.statista.com/markets/413/ecommerce/U.S.CensusBureauNews\)](https://www.statista.com/markets/413/ecommerce/U.S.CensusBureauNews). (2016). Retrieved from <http://www.census.gov/retail/mrts/www/data/pdf/ecurrent.pdf>
- [21]. Tribune., 2015. By 2020: Pakistan's ecommerce market to surpass \$1 billion. Retrieved May 23, 2017, from <https://tribune.com.pk/story/1016706/by-2020-pakistans-e-commerce-market-to-surpass-1-billion/>
- [22]. Wharton., 2015. Online Groceries in India: Will Consumers Bite? Retrieved July 9, 2016, from <http://knowledge.wharton.upenn.edu/article/online-groceries-in-india-will-consumersbite/>
- [23]. Online Grocery Shopping: An exploratory study of consumer decision making processes, Joana, March 2015.
- [24]. Pozzi, A. (2015). The effect of Internet distribution on brick-and-mortar sales. The RAND Journal of Economics,44(3), 569–583.
- [25]. Pozzi, A. (2015). Shopping cost and brand exploration in online grocery. American Economic Journal:Microeconomics, 4(3), 96–120.
- [26]. <https://www.businesstoday.in/latest/trends/reliance-jiomart-opens-online-grocery-service-in-200-citieskey-things-to-now/story/404916.htm>