**PROJECT PROPOSAL ON:**

**E-COMMERCE GROCERY APPLICATION**

**BY:**

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**CST21HND0301**

**SUPERVISED BY:**

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**1.1** **BACKGROUND OF THE STUDY**

Food and grocery shopping has undergone a revolution in every retail sector, with noticeable changes in customer purchasing behavior driven by high-income growth, changing lifestyles, and cost-effective and efficient online and mobile technology. Consumers' need for ease has grown as they devote less time to shopping and more to other activities, and their attention has frequently been diverted to virtual shopping as an alternative medium. Thus, the rapid expansion of the internet is altering the way people browse for and purchase items and services, and it has quickly become a worldwide phenomenon. As a result, one of the primary motivators behind customer preferences for online purchasing has been convenience. Although still in its early stages, online grocery is gaining pace and becoming increasingly incorporated into the everyday lives of customers in various areas. Despite the development and significance of online grocery shopping, little is known about how individuals buy goods online. Khan et al. (2020)

Grocery shopping in the 21st century is changing drastically, and one major element of this change is online grocery shopping (Peregrin, 2018). Given this prior work, when juxtaposed with in-store shopping, online grocery shopping has the potential to dramatically limit the impact of both the cognitive barriers to healthy food access as well as community access barriers related to healthy food purchase within the supermarket food environment: consumers can shop online at any time and online grocery shopping allows low-income food desert dwellers and customers with limited mobility to order groceries online and have them delivered (Appelhans, 2019).

**1.2 STATEMENT OF THE PROBLEM**

The factors that influence the course of development of this work is the problem that customer encounter when they want to purchase groceries, customer have to practice in-store shopping, and some even go around with a lot of cash to purchase groceries which is very dangerous and risky, all this problem motivate me to embark on this project work in order to eradicate the above problems mentioned. Thus, it is necessary to introduce an information system that would be used for the recording of event regarding and complication related to grocery ordering.

**1.3 AIM AND OBJECTIVE OF THE STUDY**

The project is aimed at developing an e-commerce grocery platform that can be used by anyone interested in purchasing groceries. which efficiently meet customers grocery demands and ensure proper financial accountability.

**OBJECTIVES**

In other to achieve the aim of this project the following objectives are set and considered relevant for the achievement. This includes:

1. To reveal the related literature on E-commerce grocery business to customer.
2. To design E-commerce grocery business to customer and to meet customer transactions needs.
3. To implement the system and evaluate his efficiency in terms of system information needs / output.

**2.1 LITERATURE REVIEW**

Article Title: Development of E-Commerce-Based Online Web Application for COVID-19 PandemicAuthors: Mohammed, M. K., Mahizebin, S., Zerin, A. S., (2020)

**Summary of the work**

This paper introduces the development of a web-based online grocery store designed to address the challenges faced by people in traditional grocery shopping, particularly in light of the COVID-19 pandemic. In response to the demands of busy schedules and safety concerns, this online platform offers a convenient solution, allowing users to shop for a wide range of food products from the comfort of their homes using computers or smartphones. The system features both an admin panel for managing product availability and website operations and a user panel where customers can create accounts using Gmail. With its user-friendly interface and time-saving capabilities, this online grocery store aims to provide a practical and safe shopping alternative during the e-commerce-driven era of the COVID-19 crisis.

**Methodology**

The research methodology for developing the web-based online grocery store involved the strategic selection and utilization of various technologies and frameworks to enhance the project's efficiency and functionality. Key technologies employed included HTML, CSS, JavaScript, jQuery, and PHP. MySQL was chosen as the relational database management system (RDBMS) to facilitate the database design process. To support local host development, XAMPP was utilized. These technology choices were made to optimize the development process and ensure the creation of a robust and user-friendly online grocery store.

**Recommendation**

To enhance the online grocery store system, the researcher should consider developing mobile apps for both Android and iOS platforms, implementing social media and mobile number sign-up options, enabling product return functionality, and incorporating coupon codes, special deals, and referral programs to attract and retain customers.

**Research Gap**

Future research efforts can explore methods to bolster system security, refine the user interface for increased user-friendliness, and investigate strategies such as referral programs and rewards to further stimulate online grocery sales.

Article Title: Smart Online Grocery Shopping App DevelopmentAuthors: Mohammed, J. Y., (2021).

**Summary of the work**

The personal grocery shopping application discussed in this paper addresses various shopping-related challenges that individuals encounter in their daily lives, including time constraints, transportation issues, health concerns, and the inconvenience of physical shopping. By integrating different types of stores, such as malls, supermarkets, and pharmacies, into a single platform, this innovative app offers customers the convenience of accessing a wide range of products, personalized recommendations based on their history, and doorstep delivery. This solution not only saves time but also provides accessibility for those with physical limitations or transportation difficulties, ultimately contributing to a more convenient and efficient shopping experience.

**Methodology**

The methodology for creating the mobile grocery shopping app involved using the Flutter programming language and Android Studio software. Flutter is known for its cross-platform compatibility, allowing the app to work on both Android and IOS operating systems. The development process included analyzing requirements, designing the system, coding, testing, and deployment. Special attention was given to designing a user-friendly interface, ensuring functionality, and integrating with backend systems for an efficient shopping experience.

**Recommendation**

The recommendation for this mobile shopping app is to focus on further expanding its reach by linking with a broader range of international stores. This expansion will diversify the available products in terms of number, types, and classifications, making it even more comprehensive for users. Additionally, establishing connections with global and local delivery companies can enhance the efficiency of the delivery process, ensuring that products reach customers quickly and reliably.

**Research Gap**

while the app addresses several convenience and accessibility issues related to online shopping, there is room for research into enhancing the user experience further. This could include investigating personalized shopping recommendations, improving the app's user interface and accessibility features, and conducting user surveys to understand specific pain points and areas for improvement.

Article Title: Design and Implementation of Online Grocery StoreAuthors: Zikra. A., Shital, M., Navindas. G., and Nidhi S., (2019).

**Summary of the work**

The internet's global reach has fueled the trend of online shopping, encompassing various products, from clothing to electronics. This trend has created a demand for online grocery stores, offering convenience and accessibility, allowing consumers to shop from home at their convenience. The Online Grocery Store operates on a B2C model, enabling registration, product browsing, secure transactions, and feedback. It's built using HTML/CSS, PHP, and MySQL, offering a promising e-commerce solution with a shopping cart feature.

**Methodology**

The web store is implemented using PHP and MySQL. PHP is chosen for its open-source nature, interactive web page development, and compatibility with HTML, adding responsiveness. MySQL serves as the backend database for organized data storage. User interactions trigger queries to the front end, which retrieves data from the backend, and results are displayed on the GUI.

**Recommendation**

The study recommends the continued development and enhancement of online grocery shopping platforms to provide users with an even more seamless and secure shopping experience. This includes improving the user interface, enhancing the security of payment options, and implementing features that further reduce fuel costs. Additionally, promoting and raising awareness about the benefits of online grocery shopping, especially among the elderly and physically weak, could lead to increased adoption and utilization of such platforms.

**Research Gap**

research gaps exist in areas like improving user experience, enhancing security in payment options, and increasing the security of the application even further. Future research should focus on addressing these gaps to make online grocery shopping even more efficient and appealing to a broader range of consumers.

Article Title: Grocery Apps and Consumer Purchase Behavior: Application of Gaussian Mixture Model and Multi-Layer Perceptron AlgorithmAuthors: Aidin, S., Ebrahimi, P., Soleimani, M., & Fekete-Farkas, M. (2022).

**Summary of the work**

This study investigates and compares the popularity of common grocery apps in Hungary and Iran by analyzing data from users who have experience with these apps. Using machine learning algorithms, including Gaussian mixture models (GMM) and multi-layer perceptron (MLP), the study clusters customers and predicts consumer behavior. The results highlight Wolt in Hungary and Snappfood in Iran as the most popular grocery apps. In Iran, users are categorized into three groups based on app services, with full covariance achieving higher accuracy. In Hungary, five apps garnered favorable user ratings. The study's emphasis on accuracy in clustering and demographic information, as well as its creative approach to market segmentation through machine learning, holds significance for online business managers.

**Methodology**

The study employs both supervised and unsupervised machine learning approaches, encompassing several stages: data import, preprocessing, data split into training and testing sets, model creation, training, clustering/prediction, and model accuracy assessment. The Gaussian Mixture Model (GMM) is a central algorithm used, designed for data clustering through probabilistic modeling. GMM assumes data points result from a mixture of Gaussian distributions with unknown parameters, differing from distance-based clustering methods like k-means.

**Recommendation**

The respondents in this study provided demographic information based on their experiences with grocery apps in Iran and Hungary, implying that results may vary in different countries and cultures. This highlights the need for future research to explore the influence of regional and cultural factors on consumer behavior regarding grocery apps. Moreover, the algorithms employed in this study exhibit potential for further development and refinement.

**Research Gap**

Future researchers should consider conducting comparative studies that employ the current MLP model in different countries to gain a deeper understanding of consumer behavior variations on a global scale. This approach can provide valuable insights into regional and cultural differences, aiding marketers and businesses in tailoring their grocery app strategies accordingly. This will contribute to a more nuanced and precise understanding of the factors influencing grocery app adoption.

Article Title: Online Grocery ShopAuthors: Aidin, S., Ebrahimi, P., Soleimani, M., & Fekete-Farkas, M. (2022).

**Summary of the work**

This study focuses on consumer decision-making processes in the online grocery shopping sector. Unlike previous research primarily centered on consumer motivations and attitudes in online shopping, this study delves into the pre-decisional, decisional, and post-decisional phases through a mixed-methods approach. The research highlights the complementarity of retail channels, where online grocery shopping is favored for major trips, while traditional stores remain popular for smaller purchases. These insights contribute to a deeper understanding of this specific retail market and offer valuable knowledge for both academia and management.

**Methodology**

The study utilized a set of specific technologies and tools for its implementation. These included the XAMPP Server with Version 8.0.11 as the server environment. The web development aspects were covered using HTML, CSS, JavaScript, and PHP, with PHP Version 7.3.21 being employed. The data storage and management system relied on MySQL, specifically Version 8.0.13. Additionally, the study incorporated the use of QR codes for certain functionalities. This technology stack was instrumental in building and running the online platform, ensuring its functionality and performance.

**Recommendation**

Based on the utilization of specific technologies and tools in this study, it is recommended that future research in this area continues to explore and leverage advancements in web development technologies and database management systems. Staying updated with the latest versions and tools can contribute to the efficiency and effectiveness of online platforms. Additionally, further research could delve into the integration of emerging technologies, such as AI and mobile app development, to enhance user experiences and expand the reach of online platforms.

**Research Gap**

While this study effectively employed a range of technologies, there remains a research gap in understanding the evolving landscape of online platforms. As technology continues to advance, new tools and frameworks emerge, influencing user behaviors and expectations. Future research should aim to bridge this gap by investigating how emerging technologies and changing consumer preferences impact the design and functionality of online platforms. Additionally, exploring the integration of innovative features like augmented reality (AR) and virtual reality (VR) within online shopping environments presents a promising avenue for further investigation.

**3.1 PROPOSED METHODOLOGY**

A comprehensive inquiry such as this is used in the research technique to unearth new facts or information about the current system. The research method used in this study is the primary and secondary source of data collection.

**Primary Source of Information**

This includes data gathered directly or indirectly from target users, with no edits or suggestions from other writers. This main source's material is considered more accurate and credible. As a result, the goal is to incorporate the knowledge gleaned from this source into the project in order to satisfy the criteria. Interviews and observations were used as primary source data collection strategies.

**Secondary Source of Information**

This essentially includes all of the information that someone can receive from existing sources such as books, the internet, case studies, articles, newsletters, and other relevant publications. The resources obtained from the internet in particular were quite relevant; various search engines, particularly Google, made it very easy to find information

**3.2 CHOICE OF PROGRAMING LANGUAGE**

HTML and CSS will be employed in designing the front-end, Python and JavaScript technology will be used as the scripting language; SQLite will be used as the database (backend), Django will be used as the backend. The combination of the above will help build a very robust platform that will be useful, fast, and handy.

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