

Design and Implementation of Online Grocery Shopping System

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Abstract — This project is a web-based shopping system for an existing shop. The main objective of this application is to make it interactive and its ease of use. It would make searching, viewing and selection of a product easier. It contains a sophisticated search engine for users to search for products specific to their needs. The search engine provides an easy and convenient way to search for products where a user can search for a product interactively and the search engine would refine the products available based on the user's input. The user can then view the complete specification of each product. They can also view the product reviews and also write their own reviews. The application also provides a drag and drop feature so that a user can add a product to the shopping cart by dragging the item in to the shopping cart. The server processes the customers and the items are shipped to the address submitted by them. The details of the items are brought forward from the database for the customer view based on the selection through the menu and the database of all the products are updated at the end of each transaction.

I. INTRODUCTION

This system will allow hotels and restaurants to increase scope of business by reducing the Employee cost involved. The system also allows to quickly and easily manage an online menu which customers can browse and use to place orders with just few clicks. Once the order is placed it is entered in the database and retrieved in pretty much real time. This allows Restaurant Employees to quickly go through the orders as they are received and process all orders efficiently and effectively with minimal delays and confusion. Thus the customer will get the service of online shopping and home delivery from his favorite shop

II. OVER ALL DESCRIPTION

A. ADMINISTRATOR

This module provides functionality for the power user-Administrator only. It will not be available to any other users of the system like Restaurant Employees or Customers. Before customers can actually use this system, functionality provided by this component will have to be configured first. It will allow an Admin to manage the menu that is displayed to users of the web ordering system:

1. Add/update/delete category to/from the menu.
2. Add/update/delete item to/from the menu.
3. Update price for a given item.
4. Update additional information (description, photo, etc.) for a given item.

Once the initial configuration is done, this will be the least likely used component as menu updates are mostly seasonal and do not occur frequently. The administrator is

the super user of this application. Admin can add new products into the existing system with all its details including an image. Administrator can delete the products based on the stock of that particular product. The admin will have a list view of all the users registered in the system.

Online Grocery Shopping					
Add New Product All Products & Edit Products Messages Received Orders Received Cancel Orders Delivered Orders Logout					
All Products & Edit Products					
ID	NAME	CATEGORY	PRICE	STATUS	EDIT
1	Tomato (1 kg)	Vegetables	₹ 35	No	Edit
2	Apple (1kg)	Fruits	₹ 150	No	Edit
3	Egg	Dairy	₹ 5	No	Edit
4	Salt (1kg)	Spices	₹ 20	No	Edit
5	Lemon (Quantity: 1)	Fruit	₹ 5	Yes	Edit
Thank You For Buying Your Grocery Items In Our Application					

B. CUSTOMER

This module provides the functionality for customers to place their order and supply necessary details. Users of the system, namely restaurant customers, must be provided the following functionality: Create an account, manage their account, Log in to the system, Navigate the restaurant's menu., Select an item from the menu, Add an item to their current order, Review their current order, Remove an item/remove all items from their current order, Provide payment details, Place an order, Receive confirmation in the form of an order number, Log out of the system. Out of all the functions outlined above, Account Creation and Management only will be used every time a customer places an order. This will allow to simplify the overall user experience.

C. FUNCTIONAL REQUIREMENTS

Registration: This phase will get Customer details like Name, Date of Birth, Email ID, Password, Phone Number. And this Field will validate the above details. This Class Applicable for new users only. **Login:** This phase will ensure that only authorized user is entering the website with only valid credentials. And it gets Email ID and password from the user. If not Registered user, it must show user Must be registered and move to registration phase. **Menu:** Menu option comes under Switch Case, allows users to see

all food items per category. Item can then be added to the cart using a single button click. Menu must include all list of items. Add to Cart: Allows users to see details of the items placed in cart. Details include Product Name, Quantity, Unit Price, Total per item and final Total of the order. It also allows 'Update' and 'Delete' an item using single button click. Payment: The payment option corresponds to two category net banking and cash on delivery. User will be asked to provide all required details. User will be insisted to provide details according to their payment option. Review Order: User will then be directed to this page, which will display Payment Information along with Order details to review. User can then use a 'Check Out' button to place an order. Once order is placed, user will be presented with appropriate Order confirmation success/failure message

D. NON-FUNCTIONAL REQUIREMENTS

Language Requirement: Software must be in English only. Implementation requirement: Application should be based on java. All of the application data is stored in a MySQL database, and therefore a MySQL Database must also be installed on the host computer. This software is freely available and can be installed and run under most operating systems. The server hardware can be any computer capable of running both the web and database servers and handling the expected traffic. For a small-scale restaurant that is not expecting to see much web traffic, an average personal computer may be appropriate.

Constraints

1. Hardware Limitations: The minimum hardware requirement for the system is 128 MB of Ram and a 60MB hard-disc drive.
2. Others: The application should be built using Java and it should, initially, be accessible through the eclipse IDE and later published on a server.

III. PREVIOUS WORK

Research on online grocery shopping has been limited since this is a relatively new retail channel. Most of the research reviewed here was conducted in the context of the US market. In one study, Park et al. (1998) conducted focus group interviews with US consumers who had previous experience with home shopping for groceries. The researchers categorized the participants into two groups: hi-tech baby boomers and older/physically challenged consumers. Hi-tech baby boomers were interested in home shopping for the convenience or because of the novelty. Respondents in this group typically used the computer to order items from home, found that ordering time decreased with experience, were very satisfied with delivery, found mistakes in orders to be their greatest source of frustration, and felt the convenience justified the delivery fee. The second group of respondents was older, had lower incomes, and was more likely to live alone. They typically bought groceries via home ordering because of physical difficulty in going to the store. They tended to phone in orders, when possible, rather than order online. Like the first group, they were very satisfied with delivery but were concerned about mistakes in orders. Unlike the hi-tech baby boomers, the

older/physically challenged group found it difficult to justify paying what they perceived to be a very high delivery fee. Both groups of respondents expressed concerns about security (using a credit card on line and having a stranger come to their home to make a delivery) and trusting the supermarket to select groceries (especially perishables and frozen food) for them. Some felt they saved money by ordering from home. Several mentioned frustrations due to the lack of online nutrient and ingredient labeling. Anderson Consulting (Kutz, 1998) identified five major groups of potential online grocery shoppers based on survey respondents' attitudes toward time, shopping, and technology. The group they termed "Shopping Avoiders" dislike grocery shopping while "Necessity Users" have limitations that make going to a store difficult. "New Technologists" are young and comfortable with technology while the "Time Starved" are not sensitive to price and will pay extra to free up time in their schedules. The group termed "Responsible" has available time and gets an enhanced sense of self-worth from shopping. US researchers at the University of Maine have been examining electronic marketing of specialty foods and drinks since 1995 (White, 1997). Specialty food and drink customers primarily shop online to buy items not available locally or to buy items that appear to be significantly higher in quality than similar products available elsewhere (White, 1998). It is not clear, however, if the behaviors and expectations of online specialty food and drink shoppers would be comparable to those of online grocery shoppers. Research by Hiser et al. (1999) confirms that consumers other than those in sub-urban dual-income households are interested in online grocery shopping. They surveyed 390 consumers in four supermarkets in Bryan/College Station, Texas. About one-third of the shoppers were familiar with online grocery shopping even though it was not available in the area at the time of the survey. Logit analyses indicated that income, the number of people living in the household, the presence of children, and gender were not significant determinants of interest in using a grocery shopping service. Age and education were, however; people over age 50 were less likely to consider using the service (compared to people 18 to 29 years old) as were those with less education.

IV. SCOPE FOR FUTURE WORK

The e-commerce market will account for 2.5 per cent of the India's GDP by 2030, growing 15 times and reaching USD 300 billion, a report said today. The current market size of e-commerce is USD 20 billion. The report by Goldman Sachs cited the "hyper growth in affordable smartphones, improving infrastructure, and a propensity to transact online," as key growth factors. There are several reports that suggest the e-Grocery market in the US alone could grow five fold over the next decade, where consumers are expected to spend upwards of \$100 billion. This is a promising forecast and the same is expected to be witnessed all across the globe. Further, India's attractive demographics - the youngest population in the world - should lead to over 300 million new online shoppers in the next 15 years, making e-tailing the largest online segment," it said. The report identified e-retailing, online travel,

digital advertising market and electronic payments as segments that could "potentially catalyse domestic companies into multi-billion-dollar businesses". India will have the second-largest digital population in the world with 1 billion users by 2030, powered by online mobile penetration, it added. "India has enough spectrum and telecom infrastructure to provide 3G data coverage to 25-30 per cent of the population," it said, adding that "further, 3G-enabled smart phones are available for USD 40 with more than 900 phones launches last year". The payment landscape is also evolving fast with the launch of digital wallets and payment banks, despite 60 per cent of e-commerce transactions in cash-on-delivery mode, the report pointed out. "Logistics and infrastructure are bottlenecks, but also indirect drivers for online adoption," it added. Over USD 6 billion of private funding has come into India in 2014 and "significant funds are still waiting, implying a potent eco-system is in place," according to the report.

V. DISADVANTAGES

1. Negative environmental impact of packaging and gas: Having your purchase packed in several layers of plastic and cardboard packaging and delivered right to your front door is good for you, but not so great for the environment.
2. Shipping problems and delays: Even the biggest and best shipping companies and online retailers have their bad days, so there's no way to ensure that you'll get your hands on your purchase in time unless you pick it up from a store. Items get lost, detoured, damaged, or delivered to the wrong address more often than you can imagine.
3. Risk of fraud: If you're shopping online, there's a larger risk of fraud, credit card scams, phishing, hacking, identity theft, counterfeit products, bogus websites, and other scams are common.
4. Less contact with community: If you do all your business online, you'll never have to leave your home. This might be great for a while but sometimes, you might want to go outside, breathe some fresh air, get a change of scenery, talk to real people, participate in your community, and just be a part of the crowd.
5. No sales assistance: In a store, there's usually someone to help you but online, you're on your own. You might have to make blind purchases and mistakes you'll regret later because there was no one to talk to.

VI. ADVANTAGES

1. Convenience: There are no lines to wait in or cashiers to track down to help you with your purchases and you can do your shopping in minutes. Online shops give us the opportunity to shop 24/7, and also reward us with a 'no pollution' shopping experience.
2. Better prices: Cheap deals and better prices are available online, because products come to you direct from the manufacturer or seller without involving middlemen. Plus, it's easier to compare prices and find a better deal. Many online sites offer discount coupons and rebates, as well. Not only are prices better, but you can save on tax as well, since online shops are only required to collect a sales tax if they have a physical location in your state.
3. More variety: The choices online are amazing. You

can find almost any brand or item you're looking for. Plus, the stock is much more plentiful, so you'll always be able to find what you actually want to buy. Some online shops even accept orders for out-of-stock items and ship when they come in.

4. Send gifts more easily: Sending gifts to relatives and friends is easy, no matter where they are. All the packaging and shipping is done for you. Oftentimes, they'll even gift wrap it for you!
5. More control: Many times, when we opt for conventional shopping, we tend to spend a lot more than planned and end up buying items that aren't exactly what we wanted (but we can't find anything better in the store). Online, you don't have to let the store's inventory dictate what you buy, and you can get exactly what you want and need.
6. Easy price comparisons: Comparing and researching products and their prices is so much easier online. If you're shopping for appliances, for example, you can find consumer reviews and product comparisons for all the options on the market, with links to the best prices. We can research firsthand experience, ratings, and reviews for most products and retailers.
7. No crowds: If you are like me, you hate crowds when you're shopping. Especially during holidays, festivals, or on weekends, they can be such a huge headache. You don't have to battle for a parking place. All of these problems can be avoided when you shop online.
8. Buy used or damaged items at lower prices: The marketplace on the Internet gives us access to listings of old or damaged items at rock bottom prices. Also, if we want to buy antiques, there's no better place to find great ones.
9. Availability of online shop: The mall is open on 365 x 24 x 7. So, time does not act as a barrier, wherever the vendor and buyers are.

S.NO	PRODUCT NAME	CATEGORY	PRICE	QUANTITY	SUB TOTAL
1	Salt (1kg)	Spices	₹ 20	1	₹ 20

Enter Address: Cholan Street, Enter city: Salem, Enter State: Tamil Nadu, Enter country: India

Select way of Payment: Cash on Delivery (COD), Pay online on this rajesh@gpay.com

Enter Your Transaction Id

Thank You For Buying Your Grocery Items In Our Application

CONCLUSION

In the next few years, we'll see a reduced number of people in the offline stores as most of the shopping will move online. Improved delivery methods like drones and robust logistics will further add to the future of online grocery

delivery services. This project helped us in gaining valuable information and practical knowledge on several topics like designing web pages using html & CSS, usage of responsive templates, designing of android applications, and management of database using MySQL. The entire system is secured. Also, the project helped us understanding about the development phases of a project and software development life cycle. Online shopping has opened up doors to many small retailers that would never be in business if they had to incur the high cost of owning a brick-and-mortar store. At the end, it has been a win-win situation for both consumer and sellers.

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