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Multi vendor market place for local grocery shoppers using innovative design thinking approach

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Abstract

Shopping over internet has been increased drastically for the past few years, which is the outcome of advancement of Information Technology, reached the common man of the society. E-Commerce business is one such platform available today which made dramatic change in the purchasing power of the people. This project is an initiative to offer a platform for local grocery shoppers to connect with local customer for e-shopping. It is necessary today to take such new strategy in business by local traders, because of usage of smart mobile phones. The objective of this paper is to provide such solution using innovative customer centric approach, called design thinking. This problem solving approach encompasses all the components which are required to make a product for competitive world.

***Keywords*: 1**Multi-vendor market; 2 Agile development; 3 design thinking; 4 human-centric; 5 digital marketing.

1 Introduction

Agile Software Development (ASD) becomes popular in project management, because it allows industries to release software quickly by reducing time between design and development [Julio et al, 5]. There

are the practices like effective communication, iterative planning process meetings by cross functional teams and continuous integration with test facilities with short iteration and releases [Solinski et al, 6]. An enhanced framework was proposed by [Craig et al, 7] that by integrating design thinking approach with reframed context of design of user experience and agile software development. It increased the capability of design quality and user experience of products and services developed through agile development methodologies.

Design Thinking is a creative way of solving problem quickly by guiding teams through a human-centric design process that allows both collaborative and iterative approaches. In order to produce cutting edge high quality products and services, we need to connect and live in digital world where information takes more value. It is used in the business to enable the process mechanism that facilitates reduced investment risk, enhanced implementation methods, increased organizational adaptability and creation of local capabilities for making innovation outcomes [Liedtka et al. 4].

E-commerce is one of the paradigm shifts in modern business in India, which made unexpected turnover in the retail trading. This successful business model turned the traditional way of doing business into smart business by making effective use of technologies and resources. It is believed that mobile commerce would bring more than 70% revenue for the business traders in the upcoming years. It provides the customer to use smart phones or computers for purchasing of items with traditional characteristics like freedom to choose, comparing with other vendors and enjoying offers in terms of cash back, coupons and vouchers. In addition to that, new characteristics also available in the solution: research / review on product and sellers, More than one payment modes and withdrawal of purchases.

Every customer checks multiple e-commerce sites for single product increases the effort to find the best quality product at affordable price. This will make some confusing among customers to choose right vendor, because lack of comparison mechanism on product quality, prices, privileges and delivery [Senecal et al.3].

2. Multi Vendor Solutions

Multi vendor market solution plays a host for variety of local grocery traders to sell their different items [Babu Kare et al, 1]. Customer also has the flexibility of shopping different items under a single roof. Government and banking sectors' offer boosts the digital payment mode, what customer is looking today. It facilitate each vendor can run their shop autonomously on a single ecommerce platform, where they provided with all the management processing facilities of business like orders, shipping or deliveries, payments, stock, customer behavior etc. Multi Vendor weighted Product recommendation component [Vijaya Lakshmi, 2] is one of the essential feature by considering price, rating, reviews, shipping and delivery among vendors. Here is the list of some benefits in this model:

- More customers and more vendors at one place

- Minimized operational cost
- No inventory
- Increased sales
- Better product quality, payment and delivery
- Price competition
- Product recommendation system

The features of the solution are highlighted in the diagram in addition to the normal ecommerce business solution.

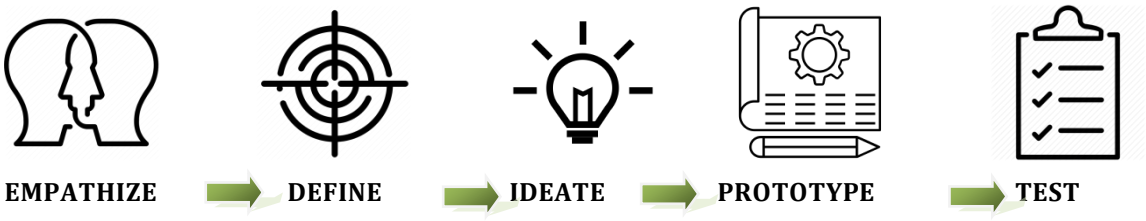
In order to address the inadequate customer requirements collection in the traditional software development method, we have adopted the design thinking method, which is the innovative way of solving customer's problems.

3. Design thinking in software development

Design thinking is the problem-finding and solving method with the following characteristics: creativity and innovation, customer oriented, designing and prototyping and assessing performance. This method would be the best for mobile application development by taking advantage of similarities between coding and thinking. Design thinking encourages collaborative team work, critical and analytical thinking.

When business/management leaders empathize with users, developers should empathize with business. Software developer get into the world of customer, examine how the use a product, identify their inconveniences and develop user focused solution [Archana et al 8].

The process flow of design thinking approach has the following stages:



Empathize

Rigorous user research is the key for understanding the problem, and ensures this human centric task in the software development in right path by keep away the biases and assumptions. There are some key questions in the empathize part to identify potential information

- Who are the target customers?
- Why customer is looking for new solution?
- Key issues/problems, the user encountering?
- Value addition customer expecting / developer can offer?

Developer has to wear customer shoes to ensure maximum customer-friendly solution. There are number of local shoppers and customers were interviewed to collect their expectation on e-commerce through the survey form of investigations. It is understand the local customers are expecting the solution with traditional buying characteristics. Comparison of product with multiple vendors has the highest priority over other features.

Define

In this stage, we analyzed the observations prepared in empathy part and organize them to define the goals of the system. By applying imaginary re-engineering, we made dream on how our software will function. The proposed e-commerce solution has been defined here with identified, valid and implementable functions as the part of the system. Inputs and views from all the members were collected, investigated and fine tuned.

Ideate

During this brain-storming session, healthy discussions made that takes right path to reach our defined goals. There are number of ideas generated to address the problem by considering the golden rule: No ideas are rejected. One of the good strategies is to build story board to express each user's journey. It is decided to offer this multi-vendor shopping solution as cloud based one that could be accessible via both web and mobile applications. During this phase, many technologies have been

recommended by the team member for desktop as well as mobile applications. At last, latest Java Script technologies Angular JS, React JS and NodeJS are preferred for developing web applications and IONIC framework has been chosen for cross platform mobile application development.

Prototype

Best idea can be materialized and it becomes miniature for our solution/product. Gathering feedback on prototype from user is used to redefine or validate user requirements and back to define stage. In the software development, coding begins here so choosing poor idea can increase the cost, sometimes we may need to scrap. In this context, developer can use tools using low-programming platform to build functional prototypes for validation.

To develop multi vendor solution for local grocery shoppers, we decided to build the prototype using Content Management System (CMS). The CMS has flexibility of changing its skin to specific outcome, based on the plug-ins supports. Wordpress in one the most widely used open source CMS for developing web application which supports plug-ins, through which prototype model was built. Woocommerce plug-in family contains Multi vendor Market Place (WCFM) that offers extensive solution with all the management capabilities which requires for developing best e-commerce platform.

Now Prototype is available for technical team, customers and vendors. Stake holder's experience in the user interface and functionalities collected, examined and difficulties/ uncertainties are identified. Those matters are carefully reviewed by the technical members, and discussed about the impact of solution for those matters. Now prototype is fine tuned in the subsequent iterations would be continued until all the issues are addressed.

Test

Now the software can be tested by both developer and user. User recommendations or feedback can be validated and find the possibility of incorporating the best matter.

4Building Team

It is necessary to build multi and cross-functional team to carry out the design thinking approach on software development. The team should build with both business and technical professionals. Individuals should associate with the user and be specialist in the problem domain. Stakeholder mapping is a way to identify all the players involved in the interactions to engage the process. Grouping of players based on the following classification:

1. People fully engaged throughout the SDLC (Software Development Life Cycle) process (technical side)

2. People engaged in entire process in the form of carrying out management activities, planning, strategy building etc.
3. Peoples who are interacting with technical team and customers, whose feedback should be considered seriously

4.

5. Conclusion

Design thinking integrated Agile Development Model yielded better results in customer centric business solutions. In the multi-vendor platform for grocery shoppers system, this design approach provides good problem learning experience to technical team by getting into customer shoes. It facilitate the team to understand customer's traditional characteristics as expectations, generate better ideas to implement the characteristics, prototype their understanding into model and iterate the same for best outcome. The prototype model developed using agile development technologies need to be enhanced with UI, security features and data analytics capabilities. There is a scope for covering large number of customers and vendors and generate vast amount of transactions which would be the source for carrying digital marketing in future.

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