

Online Urban Farming: Introducing online platform for garden lovers

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Abstract—

Urban agriculture is the one of the most relevant environmental innovation of the modern era. Sustaining green habitation in city areas has a great social, environmental and commercial effect among the city dwellers. In fact, the decision of urban plantation and rooftop gardening in city can make overpopulated city area more suitable for living with greener environment. Implementation of innovative ideas in this domain can increase the chance of a healthy environment. IT products can certainly be a sustainable solution to network people in the noble cause to make their populated cities with more green habitation. Moreover, online software solution can ease the process of urban plantation in urban spaces like rooftops, balcony, enclosed spaces with little sunlight. More specifically acquiring the tools and services related to gardening is seldom in the city. Online software-based products can help people to network to other people who have implemented knowledge about urban farming. Also, people can get to buy and sell agricultural tools as well as the harvest. In this project, we aim to design, implement and test a software-based solution for buying, selling, networking and giving knowledge about urban agricultural products among the online users.

Keywords—Urban Farming, Mvc Framework, Rooftop farming, Online application, Urban gardening)

I. INTRODUCTION

In the modern era of science and technology, buying and selling of goods in ecommerce application became increasingly popular. Nowadays, almost everything is possible to get via online. In the context of Bangladesh, agriculture is the one of the most crucial sector for the growth of our middle income economy. Most of the developed cities in our country are densely populated. Even most of the cities are suffering rapid unplanned urbanization. This cause destruction of green habitation inside the city area. But green habitation is very important for maintaining a healthy air inside the city. Due to organizational factors, often city areas are deemed to have more commercial values and it caused no green habitation. In the context of Dhaka, roughly 3% of the area is covered by green habitation. It is a very low ratio of green habitation in terms of land area when we compare it with most developed cities all around the world .

Online platform for ecommerce of agricultural products is really crucial for developing interest in urban farming among the city dwellers. Using the ecommerce site users can buy and sell garden products and also users can gain knowledge via sharing the tips regarding the gardening. Furthermore, logistics services via online platform can benefit the sales of the nursery owners who have little outreach of the customers. Online services of the ecommerce solution of the urban farming can consists usually delivering the gardening tools, seeds, manpower, 3D plans of the gardening, tips, and experimental designs.

II. BACKGROUND LITERATURE

A. Motivation in Online Urban Farming

Urban gardening or urban farming could be the perfect solution for reducing the overwhelming pollution inside Dhaka city. Urban farming is the cultivation of food within metropolitan cores as opposed to that in more pre-urban and rural areas [1,2,3]. Bos presented the impact of social media for creating urban farming as a sustainable food network in city areas [4]. Urban green spaces or greeneries are predominantly crucial for proper functioning of the ecosystem in any urban environment [5]. Urban green spaces can play critical role in conserving biodiversity, protecting water resources, improving microclimate, sequestering carbon, and even supplying a portion of the fresh food consumed by urban dwellers [6]. Author in [7] asserted that the green resources in Dhaka are overwhelmed by a number of limitation inherent to the exceptional mode of urban development, rapid increase of urban population, transformation of green and other open spaces into other types of land use, lack of proper planning and implementation and management restrictions as well [4]. Socially acceptable urban agriculture businesses: this paper is suggesting that we can take this urban rooftop farming as business purpose [8]. Brooklyn Grange is the world's leading soil rooftop farming company and sustainability center for providing services to its customers a platform to get knowledge about urban farming and services of plantation confirmation on urban gardening. But the online service of the company can't be used in Bangladesh. The importance of local online services is really crucial for spreading the urban farming in Bangladesh.

B. Existing Soutlion for Urban Gardening

There are several apps with local and international affiliation can be address in the table 1 where we identified the basic mode of busines and features of the applications.

There are many online application is available on google Playstore. We have searched on Playstore and found a various types of online based rooftop gardening apps.

1. Rooftop Garden Ideas –In this apps, client will find only various types of design.as we know, Different people different interest .so people can find rooftop gardening design based on their taste, personality.

2. How to make a garden –This apps has the details of the basic knowledge of gardening .choosing the right soil ,how to make tub ,how to grow plant ,what's need to done for taking care of, scientific way etc.

3. Roof gardening Bangla-how to create a roof garden, basic knowledge of growing plants, tips about gardening.

| Website/Tech. | Category of Business | Features |
|---------------------------------|--------------------------------|---|
| Nagarkrishi | Retail sale of own garden kits | Shopping of garden kits |
| Prkriti Farming | Garden Sservices | Membership based service for garden management |
| Ugao | Ecommerce | Garden services, online shopping of garden kits |
| Smart Garden | 3D garden designing | 3D design of garden space. |

TABLE I. Existing Solutions

III. TECHNICAL DETATILS OF THE APPLICATION

The urban gardening application is an application to provide gardening services to the customers who own the urban spaces. This application is a bridge between two communities: the plantation service providers who lack technological support and the city dwellers who want to grow garden in their urban spaces.

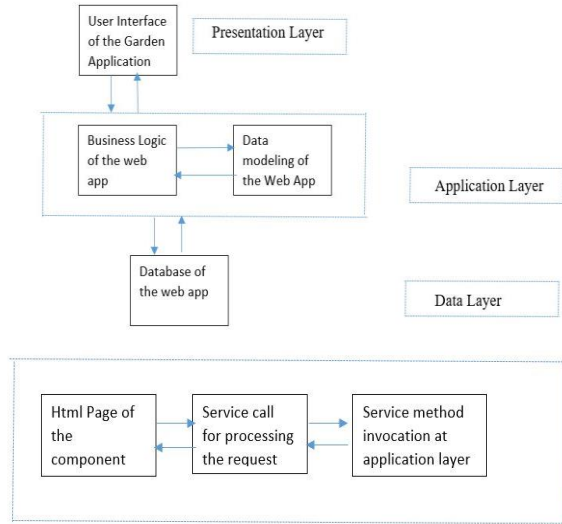


Fig. 1 : Top Down View of the Application

We build sperate web application and mobile application to facilitate urban gardening. More architectural design of the application in the following sub-sections.

A. System Level Design of the Web application

System level design of the web application consist of different technological parts. We implemented our application in Laravel application framework. Our Application consists of different modules with range of services. Figure 2 shows that:

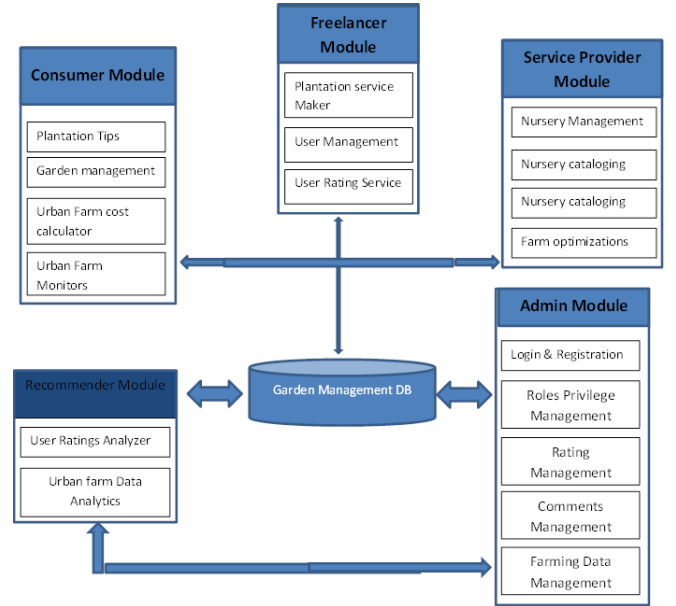


Fig 2. System Design of the Web Application

B. System Level design of the Mobile Application

The mobile app has the system level architecture presented in the Figure 3.

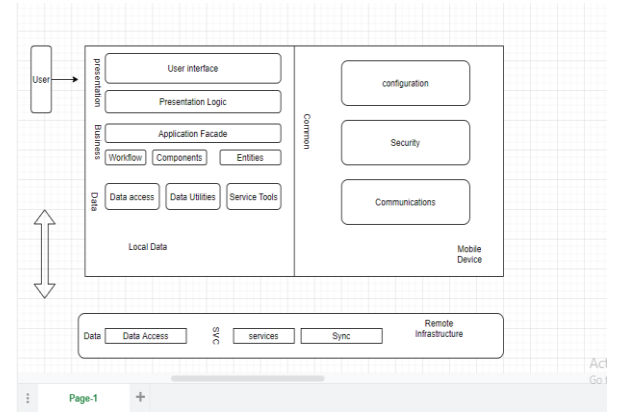


Fig 2. System Design of the Mobile Application

C. Module Descriptions Of the Web Application

Our newly developed final prototype has four basic modules: For the web application:

1. Admin Module:

This is the module where server/app administrator manages the user roles, privileges, and other administrative tasks of the web application

2. User Module:

This is the module which is used by 3 types of user category: Customer, Nursery Owner/Gardener, Service Provider

3. Authentication Module:

This module helps the users or administrator to validate the form data or other data driven functions.

4. Data Management module:

This module helps the end users to manage their information also this module can predict/suggest new information via its data visualization capability.

D. Module Descriptions Of the Mobile Application

. There are a couple of highlights which are ideal to have and some which are unquestionable requirements, yet many will make your application truly stick out. By keeping all these fact in our apps so that people don't feel bored using our apps. People don't like complicated thing especially some things what they will use in their regular lives. Apps should be very easy to use, need to fulfil some basic needs of clients.

So, we have created some feature for our apps for our clients.

1.Modesty: Numerous individuals have limited capacity to focus. So if you make your application hard to explore or complicated and it's very tough to understand at that point they will lose their interest.

2.Speed: Quick stacking screens are essential. Nobody likes pausing, especially when all they need something to know or looking for something and they see this at is a screen loading and this is very disappointing and irritating for a user. If they need to wait this long, they will look for something else which is better than this. Speed implies a proper arrangement of illustrations and not bringing enormous tables and information bases. Keep it basic and keep it fast.

IV. RESULTS AND DISSCUSSION

In this project we tested our code run our application in the remote host server and also in the local server. After deploying the application into the local server we deployed our code base into a hosting server. This deployment enables the users to interact with system. Our system is fully operational right now and some developments are still going on for future releases. This section gives our through summary of our test run of the overall web application, field testing reactions of our prototype, the performance review of the system and the errors of the application.

A. Test-Run of the Applications

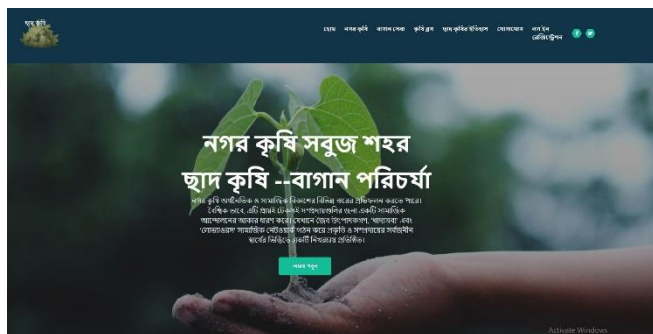


Fig. 1. Home Page of the web application

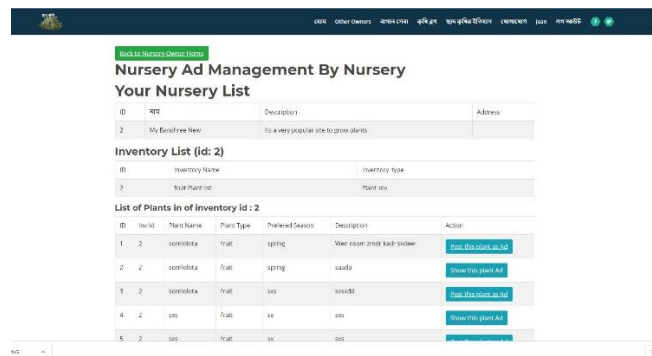


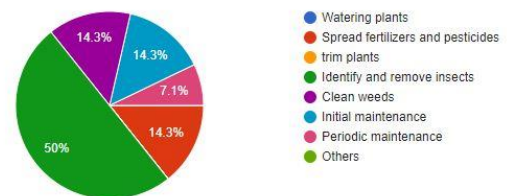
Fig. 4 Ad Management Portal for Nursery People

B. Survey Findings on the web and mobile Application

In our survey, most of the respondent was young people and almost 90% of the user are young people. We demonstrated our app to them and then the reviewed our app in terms of the features of the application. 50% of the respondents were aware of there should be service related to the diseases of the plants in the application. Almost 54% people wants overall maintenance of their garden.

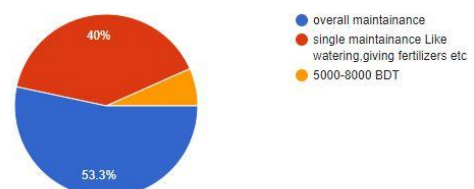
4.Which service you want to get?

14 responses



6.If you are offered a service where service provider will do the daily maintenance(watering plants,spreading fertilizers and pesticides,overall maintenance) for your garden,how much would you like to pay monthly for that service?

15 responses



C. Errors in the application

Our system has several errors which we found during the deployment stage and UX testing phase. We observed problem during order tracking and order management. When a user orders a plant to buy the following 2 steps happen:

- Call the nursery caretaker to get the plant/other staff
- After that nursery owner update all their information on orders at days end.

This step creates problem sometimes so that user sometimes doesn't get update new information about the order.

CONCLUSION

Online platform for urban farming can be the potential application for creating green and beautiful Dhaka city. It can certainly help the end users with both economically and environmentally. Moreover, the software certainly created a

bridge between the customers and the nursery owners. Now also can the customers can get new information about expert advices from home to grow their garden more effectively. It can reduce the overall cost of the maintains of their garden. Most interestingly, our app is economically good option for the both nursery owners and the customers. Since the nursery owners wants to promote their business, they can now use the online application and get profited. On the other hand, customers now can get home services via the online platform so that its also profitable for the home dwellers. In future, if we focus more on community building the software will have certain economic success.

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