Development of mobile application for Construction Project Management

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Abstract - **In the today's digital world peoples are fascinating about the digital world, we attached a construction company with the digital system which provides an opportunities to the construction company to improve their performance of on-site construction management. We have develop a mobile application for live tracking of all the construction activity which is actually happened onsite. This system mainly focus on site management i.e. Management of Labors, material Management, next day work planning, office record keeping and proper communication and coordination between the project participant. Leading players can take action from their device whenever it's necessary. This study helps to know illustrating how digital system can be used for on-site construction management. The aims of this research paper is the given system is used to assist construction engineers in achieving a high level of productivity and efficiency.**

Keywords: live tracking, Labour management, Material management, Office record keeping, proper communication

1. Introduction

The construction sector plays an important role in the economic development of countries. It currently represents about 13% of global GDP and this is expected to increases to 14.7% by 2030.The construction industry of India is an important indicator of the development as it creates investment opportunities across various related sectors. In today's modern world construction is one of the largest growing activity. According to the size of construction whether it is residential, industrial or an infrastructure sectors thousands of people may be involved, which obviously requires a proper planning. Construction Company are interested in Planning the various construction activity, material management, Labour management and improving site information exchange for enhancing productivity of the construction project. However, it is not an easy task to conduct timely and effective exchange of construction information among construction participants. Large area of construction site with harsh weather conditions and scattered construction resources makes it difficult to manage the construction project.

We attached a construction company with the mobile application which provides an opportunities to the construction company to improve their existing process of on-site construction management. We have created system in which for mobile we developed an application and for desktop we design a website for the management of all the construction activity. This system mainly focus on site management i.e. Management of Labors, material and fleets, Management of work planning, progress monitoring and profit loss analysis. Leading players can take action from their device whenever it's necessary. This mobile system was applicable for real field construction site. On site difficulties can be managed on the spot. Key players can take action from their device wherever they want. Ever improving technologies of smart phones and mobile computing provide engineers to improve construction project management.

It is necessary to develop a mobile application for on-site overall construction project construction management that provides live tracking of your construction project. The system was focused on important functions of the management of materials, labours, next day work planning, scheduling, also the effective management of available resources, on-site management and Office record keeping.

2. Problem description

After agriculture, the Construction industry is the second largest industry in India. The industry accounts more than 8% of India's GDP growth. In today's digital world everyone having crazy about digital technology. Every construction companies invest huge amount of money every day for improving his construction management technology. To achieve the economy in construction it is important to focus on management of construction material, labour, and fleet management, live tracking of construction work, progress monitoring, office record keeping and the effective communication between the project participants. It difficult to maintain throughout the project during execution stage.

3. Aims and Objectives

The aim of the research paper is to improve the performance of project in facilitating the use of mobile technologies for the management and construction of buildings. It aims to identify and implement appropriate information technology solutions that improve overall project performance, increase efficiencies on construction projects.
- To develop the application for construction project management.
- To provide the Effective communication between the project participants in construction site
- To manage the labours, material effectively and efficiently.
- To keep proper record of construction site and to avoid the paper work.

4. Advantages

- The use of mobile application for on-site construction management and the management of Construction Company that gives your construction team updates in real-time.
- To Enhancing work efficiency
- The use of system helps in running construction projects on times
- Better communication process
- It helps to prepare a construction scheduling, planning and monitoring of all the construction activity.
- Proper Material management to avoid shortage of material and to maintain the stock of materials.
- It provides proper management of fleets during construction of projects.
- It helps in management and proper assignment of labours to the particular work also their salary management, attendance record keeping.
- To minimize paper work and proper record keeping.
- It helps to analyse the final profit and loss statement.
- This system is economical as compared to other tools of management.

5. Limitations

- In case of network problems it obstruct the work flow.
- Smart phones are required to use the mobile applications.
- Special person required to developed the application

6.   Evaluation of concept

6.1 About application
We have developed a mobile application for on-site construction management and the management of small scale Construction Company that gives your construction team updates in real-time. The system was focused on important functions of the management of materials, labours, next day work planning, scheduling, also the effective management of available resources on-site management and Office record keeping. We are trying to develop the mobile application for Shree associates construction company Nasik.

6.2 In application-
In application I gave priority to the persons like wise to manage the construction project in there level.
1. Director
2. Planning engineers
3. Site Engineer
4. Site supervisor
5. Construction labours
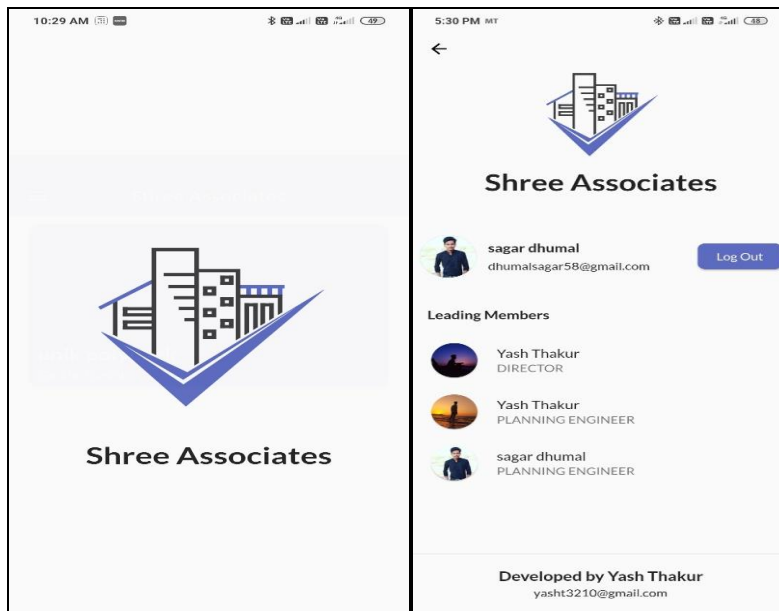
6.3 Features of applications

This mobile application used for small scale to large scale Construction Company for its organisational management. If our new construction project start, we create a project in this application and managing all the things from start to end of the project. Monitoring the project in his different phases for analysis of profit and loss statement.
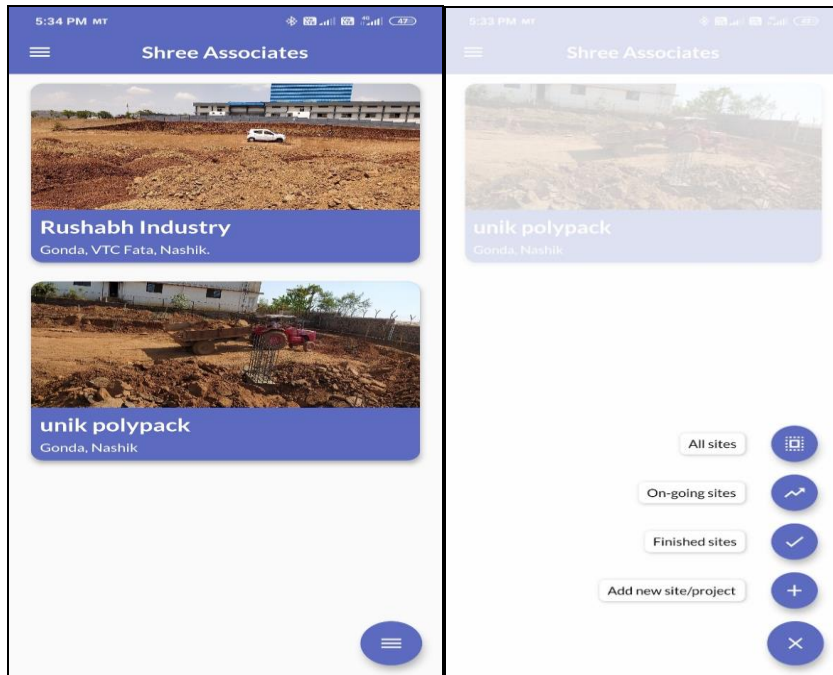

6.3.1. Add new site/project

By using this option we can create a new project where we want to do management.

6.3.2. Finished sites

If we click on finished site option then we show all the completed sites. In which we can check all the records of previous completed sites. We can also see the total materials and labours required to complete the project. In which we should calculate the total cost required to complete the project and prepared profit and loss balance sheet.
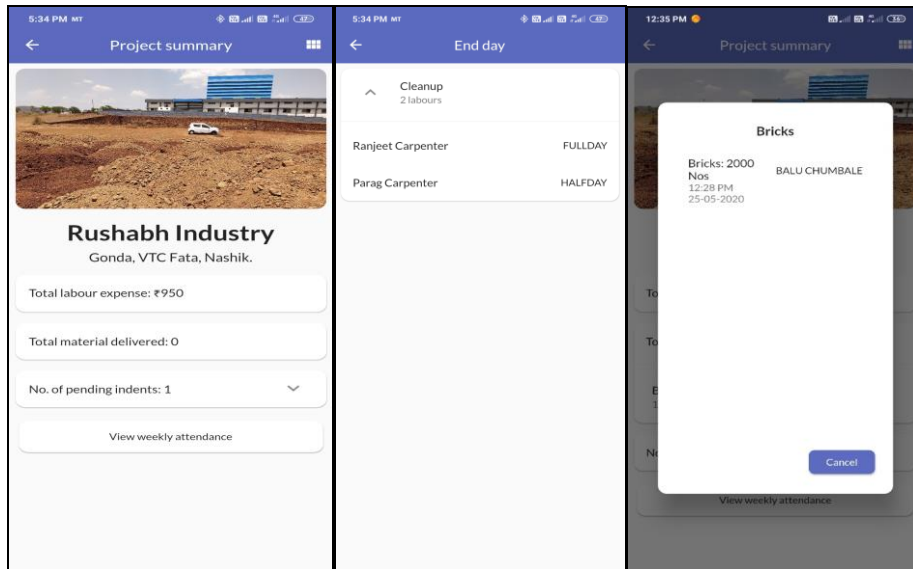
6.3.4. Ongoing project

When we click on this option all ongoing projects open in front of the screen from where we can manage and monitor all the ongoing activity of the project. In which we can manage materials required for construction, labours, upload project documents, photos and view daily progress report.
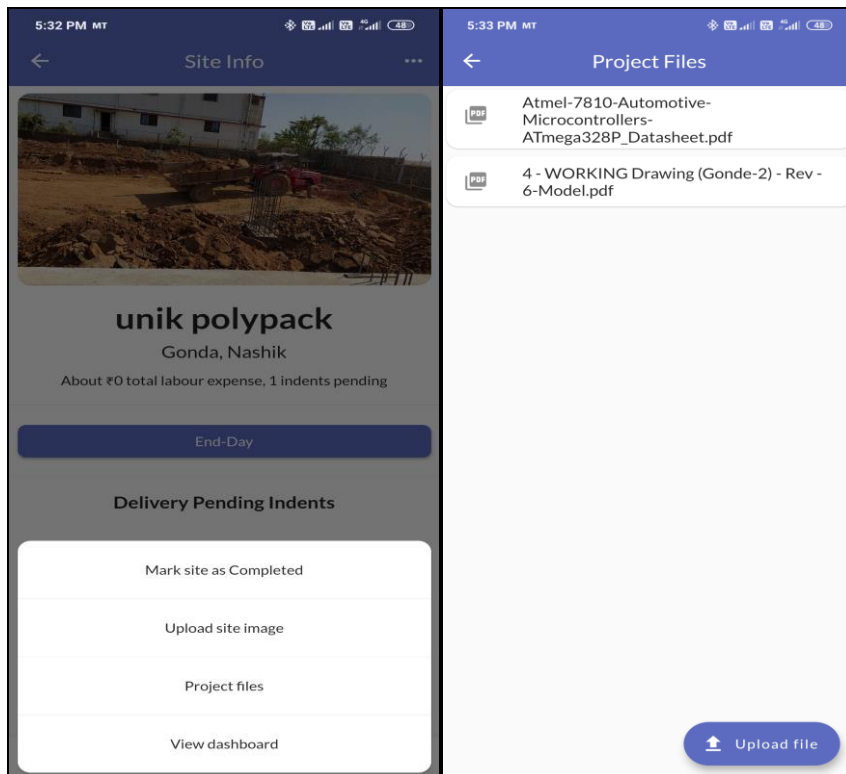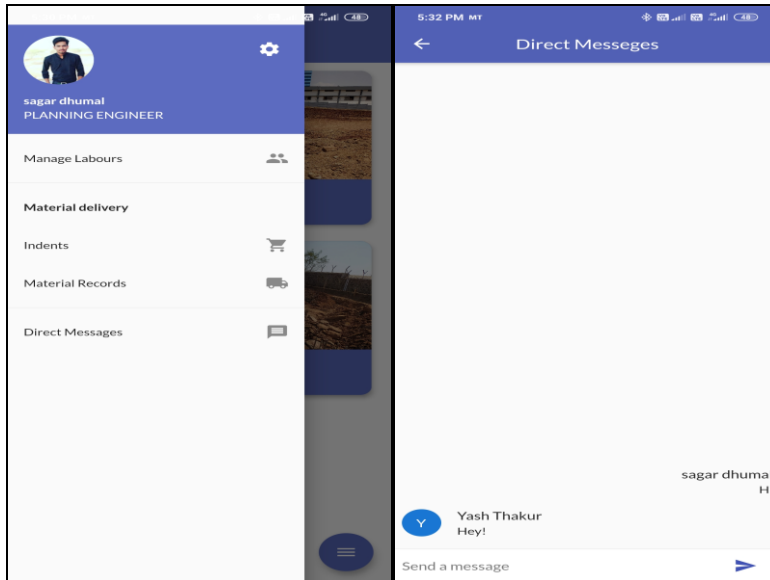
6.3.5. All sites

In this option you can see all the projects which is completed and ongoing.

Following are the key features which will helpful in construction industry to manage construction site effectively.

1. Material management
2. Labours management
3. Chat Box

1. Material management-

If you are site engineer or site supervisor and you need some material for your project where you supervised then you should simply put down the indent of that material by clicking indent option and put down all the related information regarding this indent eg. Name of material, quantity and for what purpose material required etc. After that the indent automatically forwarded towards the planning engineer. He check the indent if it is ok then he approve otherwise reject if not necessary. If planning engineer prepare an indent of some important material there is also one option to notify director. After material came to site, site Engineer fill the above information after that record is submitted and it automatically save to software memory book. We can check this record when we want.
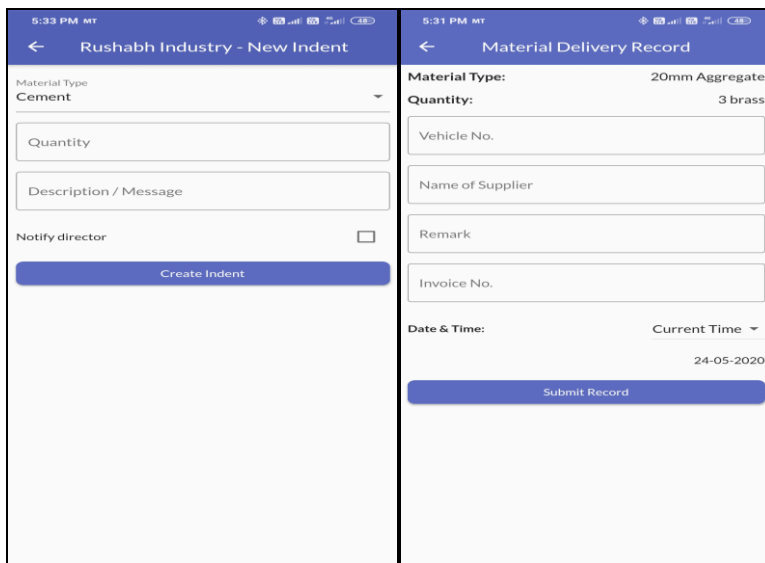
2. Labour management-

By using this option we can manage workforce required for the construction work. We keep all the records regarding numbers of labour, his salary, pending salary, his daily wedges, work done and daily attendance of labours. Finally at the end of the site we will get how much amount we should invest to construction of this project.
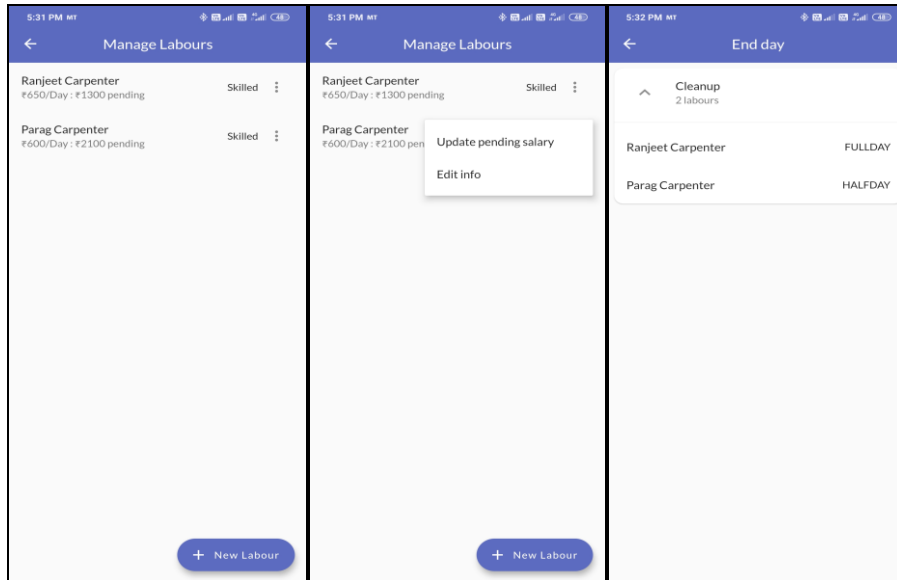
3. Chat Box

The Effective communication throughout the project participants in construction sites is a major factor for construction projects management. The efficiency of project are improved by a speedy delivery of these projects data's, this paper presents the development of a mobile application system to support construction site management and communication. The developed mobile application is designed to improve communication between Manager, field office staff, and mobile users. At the construction sites. The mobile application specifications provides users with valuable features such as, receive instructions from site, send requests for interpretations and retrieve information about projects.

7. Future scope

In this system we should tried to give an update on adding the features of management of fleet, Project scheduling, planning and monitoring, automatic bar chart preparing, Progress monitoring, Design and development of website for desktop.

8. Conclusion

This system used on construction site have obvious proves to be advantages in the construction industries. Every construction companies invest huge amount of money every day for improving his construction management technology. The benefits of this technology is that to optimize paper work, Office record keeping, Effective communication between project participant, material management, Labour management, Scheduling, Progress monitoring. If the companies follow up this new technology i.e. mobile application, then in the field of construction management can be introduced to an unlimited amount of innovative and superior quality of management to increased productivity and profits.

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