



## Analysis and Construction Management of Maintenance in Residential Buildings by Mobile Application

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### Abstract

Building problems are a regular occurrence, particularly in older residential buildings. One of the variables that contribute to a building's bad state is insufficient maintenance management. People are also responsible for the building's poor maintenance, with the authorities in charge of its conservation. The purpose of this study is to support customers and clients in their efforts to raise maintenance standards in Pakistan. This study works on the core ideas of construction management with a focus on using mobile to improve the effectiveness and standard of residential construction. The suggestions and observations included in the conclusions should be taken into account while performing such a task in action. An effective technique to do repairs and maintenance, which are constantly needed in buildings, particularly residential buildings, can be found in mobile applications. This study focuses on how mobile applications can improve work quality and reduce completion times.

Keywords: Mobile Application, Maintenance, Residential Building, Cost Estimates

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## Introduction

Construction is currently the second-largest industry worldwide. This construction industry is the greatest employer in the nation, contributes significantly to its growth and development, and raises peoples' standards of living and urbanization.

Buildings and other resources need to be maintained to maintain their pleasing appearance and function at their best. Inadequate maintenance can lead to decay, degradation, and decreased performance as well as health effects and safety threats to users, occupants, and nearby people.

Relative relevance index analysis of the data collected from the various sites helps in identifying the significant repairs that will be required when the residents take possession of their homes. The emergence of maintenance applications can increase the effectiveness of the work's quality and duration, as mobile applications allow users to quickly access available service providers, choose one to hire based on reviews, schedule tasks according to their convenience, and receive an indication of the service's cost.

## 2. RESEARCH OBJECTIVE

The following objectives have been determined:

- To research the various maintenance tasks and repairs that should be performed on residential structures.
- Comprehensive data collecting on residential building maintenance and repair.
- To study the many justifications for making a mobile app for it.
- Utilize the help of the project manager to collect data by survey or questionnaire.
- Perform data analysis to assess the application's feasibility and functionality for repair and maintenance.

## 3. PROBLEM STATEMENT

Many residents in housing projects in different sections of the city regularly face problems when trying to resolve maintenance and repair tasks. As a result, the repair work sometimes takes longer and costs more money. The different causes and techniques to reduce the maintenance problems occupants confront have been demonstrated in numerous prior case studies, however, these problems can take longer to resolve for a wide range of reasons. It suggests that there are either barriers preventing the successful acceptance of their suggestion or a lack of understanding about the suggested construction practices. Each case study of the construction project might be different.

Maintenance can help:

- Prevent unnecessary damage from the elements or regular use.
- Increase performance.
- Prevent the deterioration and decay process.
- Maintain structural safety and stability.

| Sr. No. | Project Name                 |
|---------|------------------------------|
| 1.      | Apex Residency, Lahore       |
| 2.      | ARCOS Housing Scheme, Lahore |
| 3.      | ARK Villas , Lahore          |

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|    |                             |
|----|-----------------------------|
| 4. | Ayoubia Town, Lahore        |
| 5. | Azam Gardens , Lahore       |
| 6. | Green Palms Housing, Lahore |

Help in informing plans for new construction, treatment, or modification of existing structures. Discover the source of defects to assist stop their continuation or repetition. Ensure ongoing compliance with legal obligations.

As such, it's important to give attention to how well building maintenance procedures and repairs are working.

#### **4. Scope of Research**

The goal of the project is to do research that will be useful to organizations and is therefore focused on offering helpful responses to the following:

- To aid with the understanding of the value of building maintenance.
- To develop professionals to maintain infrastructure effectively and efficiently.
- To provide building maintenance advice.
- To offer answers for the importance of poor approach and maintenance.

#### **5. Justification for The Research**

The literature review identified many problems and consequences of insufficient maintenance of buildings and delays in repairs. These studies use questionnaire surveys and interview techniques to identify the major causes of delays in structure maintenance and repair. The studies in the above-mentioned works rank the relative relevance of those aspects analytically and highlight the need for appropriate maintenance and various feasible techniques.

#### **6. Limitations of The Research**

Many research projects had limitations after being recognized. To conduct this research, there was a limited inquiry into residential construction projects in Lahore city areas, with the majority of the attention being paid to residential projects that were only located in Lahore city regions and were within a specific cost range. Data collected from each site is considered confidential information and is only used for construction projects at that sites.

#### **Method**

To understand the causes and categories of delays in building projects, a review of the literature is first conducted. This factor is then arranged into groups, and a questionnaire survey style is created. This format for a questionnaire survey is continued to get views from people who have experience with construction projects, such as contractors, owners, consultants, etc. Data gathered from the questionnaire survey was collected while visiting the specific sites of the Lahore city construction project, responses from which were then analyzed following sampling techniques. The owners of six residential projects in Lahore city areas were sent a questionnaire. The responses provided by the residents are used to complete this questionnaire. The project manager assisted in developing those questionnaires, which put a special focus on time and cost factors.

## Results and Discussion

- 94% of the sample population have not come across any specialized applications for these services, however, 6% have come across an application like URBAN CLAP, whose primary function is not repair and maintenance services but instead offers a few services.
- The survey was conducted at the following locations: Apex Residency, ARCOS Housing Scheme, ARK Villas, Ayoubia Town, Azam Gardens, Green Palms Housing, Lahore . With the help of the above questionnaire, it can be seen that the majority of the maintenance problems faced involved 27% electrical work, 34% plumbing work, 15% tiling work, 10% wall crack concerns, 8% painting issues, and 5% fabrication issues.
- While 69% of residents took 2-6 days to get it repaired while 31% took a 7-10days.
- Every resident ultimately paid extra for the services because there was no reliable resource to learn about such services, so they were all unaware of the real costs.
- 54% of the residents found about the service provider from friends and other associates, 25% from the internet, 14% from contacting the project development team for such repairs and maintenance, and the remaining 7% came in contact via advertisements.
- 41% of the inhabitants knew which services provider to contact the other 40% were unsure, and 19% had no idea. As a result, 31% of the residents faced major difficulties, 24% moderate difficulty, 27% minor difficulty, and 18% no difficulty at all in having the repair work completed.
- Therefore, the civil industry must adopt new technology-based modules that have a brighter future and make such services easily accessible.

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