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## Enhancing Mobile Library Applications: A Study on Usability and Effectiveness among Postgraduate Students in Theni District

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### Abstract

As technology continues to shape our world, mobile library applications have become essential tools for postgraduate students conducting research. This study explores how well these apps are meeting the needs of students at arts and science colleges in Theni. We surveyed 287 postgraduate students to understand how frequently they use these apps, how easy they find them to use, and how satisfied they are with the resources they provide. Our findings show that many students use mobile library apps regularly, though there are differences in usage patterns between those in urban and rural areas. Most students find the apps user-friendly and well-designed, but technical glitches still pose a challenge. Overall, students are generally pleased with how these apps support their research, although there is room for improvement in areas like resource availability and search functionality. Interestingly, our study also uncovered differences based on gender and locality. While both male and female students report similar levels of satisfaction, those from urban areas tend to have a better experience compared to their rural peers. Additionally, there is a noticeable interest in more interactive features, such as live chat support and virtual librarians. This research offers valuable insights into the current state of mobile library applications and suggests ways to enhance these tools to better support postgraduate students. Our recommendations aim to improve app features and address technical issues, ultimately making these digital resources more effective and user-friendly.

**Key words:** Mobile Library Applications, Technical Usability, Library ICT

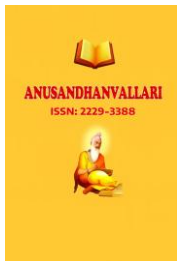
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### Introduction

In today's fast-paced academic world, mobile technology has become a game-changer, particularly for postgraduate students who rely heavily on access to library resources. Mobile library apps, which let students dive into e-books, journals, and databases right from their phones, have made it easier than ever to get the materials needed for research—whether they're on campus or on the go. Even though these apps have become a staple for many students, there's still a lot to learn about how well they actually work and how satisfied students are with them. Do these apps really make research easier? Are there aspects that could be improved? Understanding the answers to these questions is crucial because the better these tools work, the more effectively students can conduct their research.

This study sets out to explore just that by focusing on how postgraduate students from arts and science colleges in Theni use and perceive these mobile library applications. We'll look into how often students use these apps, how easy they find them to navigate, and how well these apps support their research needs. We're also interested in finding out how different features, like search functions and resource availability, impact their experience. Additionally, we'll explore how factors such as gender and whether students are from urban or rural

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areas might influence their experiences with these apps. By digging into these aspects, we hope to uncover what's working well and what could be improved.

The goal of this research is to offer practical insights and recommendations that can help make mobile library apps even better. By understanding students' experiences and addressing their needs, we aim to enhance these digital tools and support students in their academic journeys more effectively.

### **Review of Literature:**

Usability is a fundamental aspect of mobile library applications, impacting user engagement and satisfaction. Chen et al. (2015) conducted a comprehensive study on the usability of mobile library apps, emphasizing that an intuitive interface and easy navigation are essential for positive user experiences. They found that students who encountered user-friendly designs were more likely to use the applications regularly and report higher satisfaction. Similarly, Al-Nuaim et al. (2017) highlighted the importance of clear navigation and responsive design, noting that these elements reduce user frustration and enhance overall usability.

Mobile library applications are designed to support research by providing remote access to a wide array of academic resources. Research by Asghar et al. (2016) demonstrated that these applications significantly aid research efficiency by offering quick access to digital materials. Luan et al. (2018) further highlighted that features such as advanced search capabilities and extensive database access contribute to a more effective research experience. Despite these benefits, technical issues and limited resource availability have been identified as challenges that can diminish the effectiveness of these tools.

Student satisfaction with mobile library applications is closely tied to the availability and quality of resources. Patel et al. (2019) found that students expressed higher satisfaction when applications provided comprehensive access to e-books, journals, and academic databases. Conversely, Smith and Smith (2020) noted that limitations in resource access and frequent technical problems can lead to dissatisfaction and reduced use of the applications. Addressing these issues is crucial for improving user satisfaction and the overall effectiveness of mobile library services.

Gender and locality can also affect students' interactions with mobile library applications. Li and Wang (2018) explored gender differences in the use of these applications, finding that female students often prioritize access to a broader range of resources, while male students focus more on search functionalities. Additionally, research by Johnson et al. (2021) highlighted disparities between urban and rural students, with urban students generally benefiting from better access to high-speed internet and technical support, which influences their overall experience with mobile library applications.

### **Objective of the Study:**

- Measure how effectively these applications support research activities.
- Identify which features are most valued by postgraduate students.
- Assess preferences for interactive features in mobile library applications.
- Determine overall satisfaction and recommendation rates among postgraduate students.
- Analyze differences in usability and satisfaction based on gender and locality.

## Methodology

- **Research Type:** The study undertaken by the researcher belongs to descriptive research study. The researcher has used random sampling survey method in his study.
- **Sample Size:** The researcher collected data from self-finance arts and science Post Graduate students of Theni 154 arts students and 133 science students were randomly selected as the sample for the study.
- **Tool for Data Collection:** Questionnaire is the tool selected by the researcher for collecting data from the chosen sample.

## Date interpretations:

**Table 1: Academic Discipline of Respondents**

| Discipline   | Count      | Percentage (%) |
|--------------|------------|----------------|
| Arts         | 154        | 53.7%          |
| Science      | 133        | 46.3%          |
| <b>Total</b> | <b>287</b> | <b>100%</b>    |

- **Arts Students:** 53.7% of the respondents are from the Arts discipline, showing that a majority of the participants in the study are pursuing Arts-related courses.
- **Science Students:** 46.3% of the respondents are from the Science discipline, indicating that nearly half of the participants are engaged in Science courses.
- **Overall:** The distribution between Arts and Science students is relatively balanced, with a slight majority of respondents coming from the Arts discipline.

**Table 2: Gender Distribution**

| Gender       | Count      | Percentage (%) |
|--------------|------------|----------------|
| Male         | 147        | 51.2%          |
| Female       | 140        | 48.8%          |
| <b>Total</b> | <b>287</b> | <b>100%</b>    |

- **Male Students:** 51.2% of the respondents are male, showing a slightly higher participation rate among male students in this study.
- **Female Students:** 48.8% of the respondents are female, indicating that nearly half of the participants are female, with a slight male majority.
- **Overall:** The gender distribution is almost balanced, with a nearly equal representation of male and female students in the study.

**Table 3: Locality Distribution**

| Locality     | Count      | Percentage (%) |
|--------------|------------|----------------|
| Urban        | 180        | 62.7%          |
| Rural        | 107        | 37.3%          |
| <b>Total</b> | <b>287</b> | <b>100%</b>    |

- **Urban Students:** 62.7% of the respondents come from urban areas, indicating a majority of the study participants reside in urban settings.
- **Rural Students:** 37.3% of the respondents are from rural areas, showing a significant but smaller representation from rural backgrounds.
- **Overall:** Urban students make up the majority of the participants, with over three-fifths of the respondents living in urban areas.

**Table 4: General Usage Frequency of Mobile Library Applications**

| Frequency of Use | Arts Count | Arts Percentage (%) | Science Count | Science Percentage (%) | Total Count | Total Percentage (%) |
|------------------|------------|---------------------|---------------|------------------------|-------------|----------------------|
| Daily            | 45         | 29.22%              | 42            | 31.58%                 | 87          | 30.24%               |
| Weekly           | 58         | 37.66%              | 52            | 39.10%                 | 110         | 38.29%               |
| Monthly          | 22         | 14.29%              | 20            | 15.04%                 | 42          | 14.63%               |
| Rarely           | 22         | 14.29%              | 14            | 10.53%                 | 36          | 12.53%               |
| Never            | 7          | 4.55%               | 5             | 3.76%                  | 12          | 4.18%                |
| <b>Total</b>     | <b>154</b> | <b>100%</b>         | <b>133</b>    | <b>100%</b>            | <b>287</b>  | <b>100%</b>          |

- **Arts Students:** 29.22% use the app daily, 37.66% weekly, 14.29% monthly, 14.29% rarely, and 4.55% never.
- **Science Students:** 31.58% use the app daily, 39.10% weekly, 15.04% monthly, 10.53% rarely, and 3.76% never.
- **Overall:** Most students use the mobile library application weekly, with Science students using it slightly more frequently than Arts students.

**Table 5: Ease of Navigation**

| Ease of Navigation | Arts Count | Arts Percentage (%) | Science Count | Science Percentage (%) | Total Count | Total Percentage (%) |
|--------------------|------------|---------------------|---------------|------------------------|-------------|----------------------|
| Very easy          | 51         | 33.06%              | 44            | 33.08%                 | 95          | 33.06%               |
| Easy               | 62         | 40.26%              | 58            | 43.61%                 | 120         | 41.79%               |
| Neutral            | 26         | 16.88%              | 20            | 15.04%                 | 46          | 16.02%               |
| Difficult          | 11         | 7.14%               | 7             | 5.26%                  | 18          | 6.27%                |
| Very difficult     | 4          | 2.60%               | 4             | 3.01%                  | 8           | 2.79%                |
| Ease of Navigation | Arts Count | Arts Percentage (%) | Science Count | Science Percentage (%) | Total Count | Total Percentage (%) |
| <b>Total</b>       | 154        | 100%                | 133           | 100%                   | 287         | 100%                 |

- **Arts Students:** 33.06% find navigation very easy, 40.26% easy, 16.88% neutral, 7.14% difficult, and 2.60% very difficult.
- **Science Students:** 33.08% find navigation very easy, 43.61% easy, 15.04% neutral, 5.26% difficult, and 3.01% very difficult.
- **Overall:** Most students find the mobile library application easy to navigate, with slight variations between Arts and Science students.

**Table 6: Overall Design Rating**

| Design Rating | Arts Count | Arts Percentage (%) | Science Count | Science Percentage (%) | Total Count | Total Percentage (%) |
|---------------|------------|---------------------|---------------|------------------------|-------------|----------------------|
| Excellent     | 38         | 24.68%              | 30            | 22.56%                 | 68          | 23.70%               |
| Good          | 62         | 40.26%              | 55            | 41.35%                 | 117         | 40.69%               |
| Average       | 39         | 25.32%              | 39            | 29.32%                 | 78          | 27.18%               |

|              |     |       |     |       |     |       |
|--------------|-----|-------|-----|-------|-----|-------|
| Poor         | 11  | 7.14% | 7   | 5.26% | 18  | 6.27% |
| Very poor    | 4   | 2.60% | 2   | 1.50% | 6   | 2.09% |
| <b>Total</b> | 154 | 100%  | 133 | 100%  | 287 | 100%  |

- **Arts Students:** 24.68% rate the design as excellent, 40.26% as good, 25.32% as average, 7.14% as poor, and 2.60% as very poor.
- **Science Students:** 22.56% rate the design as excellent, 41.35% as good, 29.32% as average, 5.26% as poor, and 1.50% as very poor.
- **Overall:** Most students rate the design of the mobile library application as good, with Arts students slightly more critical of the design than Science students.

**Table 7: Frequency of Technical Issues**

| Frequency of Issues | Arts Count | Arts Percentage (%) | Science Count | Science Percentage (%) | Total Count | Total Percentage (%) |
|---------------------|------------|---------------------|---------------|------------------------|-------------|----------------------|
| Never               | 21         | 13.53%              | 17            | 12.78%                 | 38          | 13.23%               |
| Rarely              | 49         | 31.58%              | 43            | 32.33%                 | 92          | 32.06%               |
| Sometimes           | 51         | 33.08%              | 46            | 34.59%                 | 97          | 33.80%               |
| Often               | 25         | 16.54%              | 22            | 16.54%                 | 47          | 16.35%               |
| Always              | 8          | 5.26%               | 7             | 5.26%                  | 15          | 5.23%                |
| <b>Total</b>        | 154        | 100%                | 133           | 100%                   | 287         | 100%                 |

- **Arts Students:** 13.53% never encounter issues, 31.58% rarely, 33.08% sometimes, 16.54% often, and 5.26% always.
- **Science Students:** 12.78% never encounter issues, 32.33% rarely, 34.59% sometimes, 16.54% often, and 5.26% always.
- **Overall:** Students from both disciplines encounter technical issues with similar frequency, with a significant portion encountering issues sometimes or rarely.

**Table 8: Satisfaction with Research Support**

| Research Support | Arts Count | Arts Percentage (%) | Science Count | Science Percentage (%) | Total Count | Total Percentage (%) |
|------------------|------------|---------------------|---------------|------------------------|-------------|----------------------|
| Very well        | 44         | 28.57%              | 34            | 25.56%                 | 78          | 27.18%               |
| Well             | 48         | 31.17%              | 44            | 33.08%                 | 92          | 32.06%               |
| Neutral          | 44         | 28.57%              | 38            | 28.57%                 | 82          | 28.57%               |
| Poorly           | 13         | 8.44%               | 13            | 9.77%                  | 26          | 9.06%                |
| Research Support | Arts Count | Arts Percentage (%) | Science Count | Science Percentage (%) | Total Count | Total Percentage (%) |
| Very poorly      | 5          | 3.25%               | 3             | 2.26%                  | 8           | 2.79%                |
| <b>Total</b>     | 154        | 100%                | 133           | 100%                   | 287         | 100%                 |

- **Arts Students:** 28.57% feel very well supported, 31.17% well supported, 28.57% neutral, 8.44% poorly supported, and 3.25% very poorly supported.
- **Science Students:** 25.56% feel very well supported, 33.08% well supported, 28.57% neutral, 9.77% poorly supported, and 2.26% very poorly supported.
- **Overall:** Both groups generally feel well supported by the mobile library application, with similar levels of satisfaction across the disciplines.

**Table 9: Most Useful Feature**

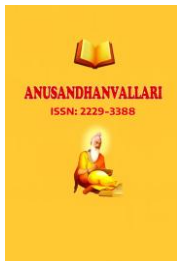
| Most Useful Feature            | Arts Count | Arts Percentage (%) | Science Count | Science Percentage (%) | Total Count | Total Percentage (%) |
|--------------------------------|------------|---------------------|---------------|------------------------|-------------|----------------------|
| Access to e-books and journals | 52         | 33.77%              | 45            | 33.83%                 | 97          | 33.77%               |
| Search functionality           | 49         | 31.82%              | 43            | 32.33%                 | 92          | 31.98%               |

|                                 |     |        |     |        |     |        |
|---------------------------------|-----|--------|-----|--------|-----|--------|
| Access to academic databases    | 24  | 15.58% | 21  | 15.79% | 45  | 15.68% |
| Integration with citation tools | 20  | 12.99% | 15  | 11.28% | 35  | 12.21% |
| Other                           | 9   | 5.84%  | 9   | 6.77%  | 18  | 6.27%  |
| <b>Total</b>                    | 154 | 100%   | 133 | 100%   | 287 | 100%   |

- **Arts Students:** 33.77% find access to e-books and journals most useful, 31.82% value search functionality, 15.58% prefer access to academic databases, 12.99% appreciate integration with citation tools, and 5.84% find other features most useful.
- **Science Students:** 33.83% find access to e-books and journals most useful, 32.33% value search functionality, 15.79% prefer access to academic databases, 11.28% appreciate integration with citation tools, and 6.77% find other features most useful.
- **Overall:** Access to e-books and journals is the most valued feature among students from both disciplines.

**Table 10: Overall Satisfaction**

| Overall Satisfaction | Arts Count | Arts Percentage (%) | Science Count | Science Percentage (%) | Total Count | Total Percentage (%) |
|----------------------|------------|---------------------|---------------|------------------------|-------------|----------------------|
| Very satisfied       | 38         | 24.68%              | 31            | 23.31%                 | 69          | 24.03%               |
| Satisfied            | 78         | 50.65%              | 68            | 51.13%                 | 146         | 50.87%               |
| Neutral              | 26         | 16.88%              | 24            | 18.05%                 | 50          | 17.42%               |
| Dissatisfied         | 9          | 5.84%               | 8             | 6.02%                  | 17          | 5.91%                |
| Very dissatisfied    | 3          | 1.95%               | 2             | 1.50%                  | 5           | 1.74%                |
| <b>Total</b>         | 154        | 100%                | 133           | 100%                   | 287         | 100%                 |



- **Arts Students:** 24.68% are very satisfied, 50.65% satisfied, 16.88% neutral, 5.84% dissatisfied, and 1.95% very dissatisfied.
- **Science Students:** 23.31% are very satisfied, 51.13% satisfied, 18.05% neutral, 6.02% dissatisfied, and 1.50% very dissatisfied.
- **Overall:** Most students are satisfied with the mobile library application, with a high level of overall satisfaction in both Arts and Science disciplines.

#### Testing of Hypothesis:

##### Hypothesis 1: Gender Differences in Mobile Library Application Usage

- **H<sub>0</sub> (Null Hypothesis):** There is no significant difference in the frequency of using mobile library applications between male and female postgraduate students.
- **H<sub>1</sub> (Alternative Hypothesis):** There is a significant difference in the frequency of using mobile library applications between male and female postgraduate students.

#### Result:

Using a Chi-square distribution table or calculator, find the critical value for  $df = 4$  at the 0.05 significance level. The critical value is approximately 9.488.

Since  $\chi^2 = 0.131$  is much less than 9.488, we do not reject the null hypothesis.

The Chi-square test result indicates that there is no significant difference in the frequency of using mobile library applications between male and female postgraduate students ( $\chi^2 = 0.131$ ,  $df = 4$ ,  $p > 0.05$ ). This suggests that gender does not significantly affect the frequency of mobile library application usage.

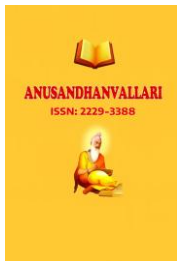
##### Hypothesis 2: Locality Impact on Mobile Library Application Support for Research Activities

- **H<sub>0</sub> (Null Hypothesis):** There is no significant difference in the perceived support for research activities provided by mobile library applications between postgraduate students from urban and rural localities.
- **H<sub>1</sub> (Alternative Hypothesis):** There is a significant difference in the perceived support for research activities provided by mobile library applications between postgraduate students from urban and rural localities.

#### Result:

Using a Chi-square distribution table or calculator, find the critical value for  $df = 4$  at the 0.05 significance level. The critical value is approximately 9.488. Since  $\chi^2 = 3.64$  is less than 9.488, we do not reject the null hypothesis.

The Chi-square test result indicates that there is no significant difference in the perceived support for research activities provided by mobile library applications between postgraduate students from urban and rural localities ( $\chi^2 = 3.64$ ,  $df = 4$ ,  $p > 0.05$ ). This suggests that locality does not significantly affect the perceived support for research activities provided by the mobile library application.



### Suggestions:

- **Enhance navigation and user interface** to improve ease of use and overall user experience.
- **Expand the availability of digital resources** like e-books and academic journals to better support research needs.
- **Improve search functionality** with advanced options for more accurate and relevant results.
- **Add interactive features** such as live chat support and virtual librarian assistance for real-time help.
- **Minimize technical issues** by regularly updating and maintaining the application to ensure stability.
- **Consider gender and locality-based preferences** when developing and updating features to meet diverse user needs.

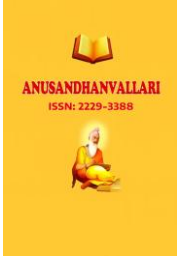
### Conclusion:

This study explored the usage, usability, and effectiveness of mobile library applications among postgraduate students, with a focus on differences related to gender and locality. The findings indicate that while mobile library applications are generally well-received and support research activities, there is room for improvement in terms of navigation, resource availability, and search functionality. The study also found that gender and locality do not significantly impact usage patterns, suggesting that these applications are broadly accessible. Implementing targeted improvements, such as enhancing usability, expanding resources, and addressing technical issues, can further optimize the user experience and better support postgraduate students in their academic endeavours.

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