

The Adoption and Usage of Recommender Systems in Tertiary Institutions in Zambia: A Case of Mulungushi University

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Abstract—This study aims to assess the adoption and usage of recommender systems in Zambian universities. Recommender systems have gained popularity in various domains, including education, for providing personalized recommendations to users. However, the extent to which these systems are implemented and utilized in Zambian universities remains unclear. For this study the scope covers Mulungushi University. Through surveys, this research investigates the current adoption status, implementation strategies, and specific usage areas of recommender systems in Zambian universities. . The study has shown that there is lack of awareness of recommender systems as evidenced by the high percentage of respondents who do not know about these systems. The study has also shown that implementations of recommender systems are lacking at Mulungushi university. The study therefore recommends more research to be conducted to identify focus areas within the university that require recommender systems.

Keywords—recommender systems , mulungushi university, adoption, implementation

I. INTRODUCTION

Recommender systems have become ubiquitous in various industries, facilitating personalized recommendations and enhancing user experiences. In the domain of education, recommender systems hold the potential to revolutionize the way students navigate their academic journey, making informed decisions about courses, accessing academic support, and engaging in extracurricular activities [1].

Recommender systems in the education sector are designed to analyze user data, including student profiles, academic records, and preferences, and provide tailored recommendations to students, faculty members, and university administrators. These systems leverage advanced data analysis techniques, such as collaborative filtering and content-based filtering, to deliver personalized suggestions on course selection, academic support services, research opportunities, and extracurricular activities [1]. By utilizing these systems, universities can optimize resource allocation, promote student engagement, and improve academic success.

While recommender systems have gained traction in global educational contexts, their adoption and usage in Zambian universities has remained an area of limited exploration and understanding. Understanding the current state of recommender system implementation in Zambian universities is crucial for several reasons. Firstly, it provides insights into the level of technological integration and innovation within the Zambian higher education sector.

Secondly, assessing the effectiveness and impact of recommender systems in Zambian universities can guide future improvements and enhancements of overall educational experiences.

To fill the above highlighted gap, this study aims to assess the adoption and usage of recommender systems in Zambian universities. The scope of this study covers the Mulungushi University only.

This study addresses the following research questions:

1. What is the current level of adoption of recommender systems in at Mulungushi University?
2. To what extent are students and faculty members aware of recommender systems and their functionality in the context of Mulungushi University?
3. Which areas are recommender systems beneficial at Mulungushi University?
4. How frequently do students and faculty members utilize recommender systems in their educational activities?

The findings of this study will contribute to the existing body of knowledge on recommender system implementation in educational settings and provide valuable insights specific to Mulungushi university. Ultimately, this research aims to pave the way for a more personalized and effective educational experience for students at Mulungushi university.

The rest of the paper is organized as follows: Section II presents related work, Section III presents the methodology, Section IV presents the results and discussion and lastly, Section V presents the conclusion.

II. LITERATURE REVIEW

Recommender systems have gained significant attention in the field of education due to their potential to enhance personalized learning experiences and improve educational outcomes. There are several published works [15-20] regarding the use of recommender systems which include personalized content recommendations, adaptive learning paths, intelligent tutoring and adaptive assessments.

Concerning personalized content recommendations, recommender systems can recommend educational resources, such as articles, videos, and books, tailored to

individual learners' preferences and needs. These systems analyze user data, such as browsing history and learning objectives, to suggest relevant and engaging content [3]. As regards adaptive learning paths, recommender systems can guide learners through adaptive learning paths by suggesting appropriate learning activities based on their prior knowledge, learning style, and performance. This personalized approach promotes efficient learning and helps address learners' individual needs [4].

Regarding intelligent tutoring systems, recommender systems can be integrated into intelligent tutoring systems, providing personalized feedback, guidance, and recommendations to learners. These systems adapt to individual learning patterns, identify knowledge gaps, and suggest appropriate learning materials or interventions [5]. Concerning adaptive assessments, recommender systems assist in adaptive assessments by suggesting tailored test items or evaluation methods based on learners' proficiency levels and learning progress. Adaptive assessments help identify areas of improvement and optimize learning experiences [6]. In addition, many authors focussed on proposing recommender systems that address course selections [7-14] while others focussed on recommender systems that addressed predictions of learner resources [15-25].

Overall, recommender systems have been thoroughly investigated. However, it is evident from published studies that explorations of the adoption and use of recommender systems in Zambian universities is lacking and therefore, this study attempts to fill that gap with a specific focus on Mulungushi university.

III. METHODOLOGY

This section presents the quantitative research methodology for the study. The method of sampling, data collection and data analysis are presented.

A random sampling method has been employed to select the sample for this study. The sample size 43 (18.9 %) from the population of 229 students from the department of computer science and information technology of Mulungushi university.

Data was collected through questionnaires administered to students. The structured questionnaires were designed to gather information on various aspects, including: Current adoption status of recommender systems, usage patterns, such as the frequency and focus areas where recommendations could be beneficial. The collected data was analyzed using descriptive statistics to provide a quantitative summary of the findings and data analysis was performed using Microsoft Excel.

Provide more details to the methodology, see comments

IV. RESULTS AND DISCUSSION

This section presents the results and discussion for each of the research questions for this study.

Figure 1 below presents the results for the first research question that sought to determine the level of adoption of the recommender systems Mulungushi university. The result shows that, among the participants, around 76.6% stated that Mulungushi university is currently not using recommender systems, while 17.6% of respondents were unsure of the use of recommender systems at the university.

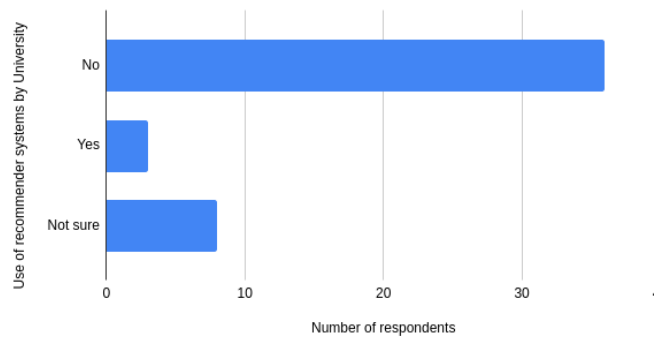


Fig. 1: Level of adoption of recommender systems by Mulungushi university

This result strongly suggests they there is no use or adoption of recommender systems by the university. This result implies that further studies may need to be undertaken that seek to determine areas within the university where such systems could be more beneficial. To enhance satisfaction of clients (i.e students), the university may employ strategies that utilize recommender systems.

Figure 2 below presents the results for the second research question that sought to determine the level of awareness of participants as regards the recommender systems. The result shows that the majority of participants (57.4%) are not aware. This suggests the relatively low levels of awareness of recommender systems among participants who largely are students majoring in computer science and information technology. This implies that there is no coverage of such important systems in the syllabi for computing students and therefore, curriculum review may be required to address this challenge.

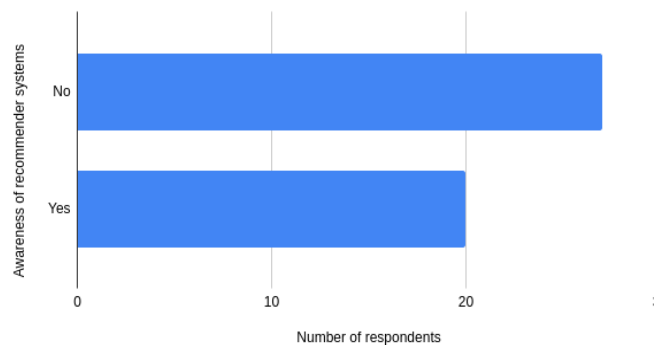


Fig. 2 : Level of awareness of recommender systems by participants

Figure 3 below presents the results for the third research question that sought to examine areas where the use of recommender systems would be most beneficial. The result shows that recommender systems use could be more beneficial in course selection (48.9%) followed by academic support services (36.2%) and research opportunities (14.9%).

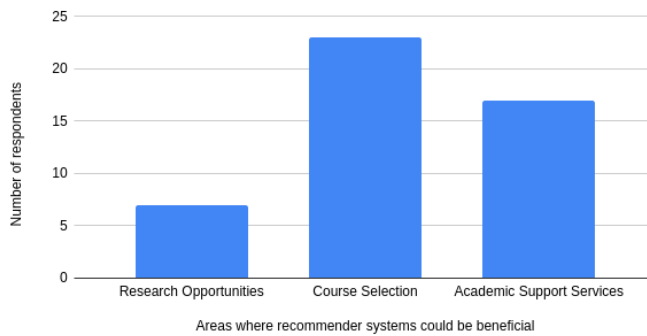


Fig. 3 : Areas where the use of recommender systems could be beneficial

Figure 4 below presents the results for the fourth research question that sought to investigate frequency of usage of recommender systems by respondents. 55.0% of respondents reported that they did not use recommender systems at all. Notably a few respondents indicated that they used recommender systems (7.5%). The remaining respondents either rarely or occasionally used recommender systems.

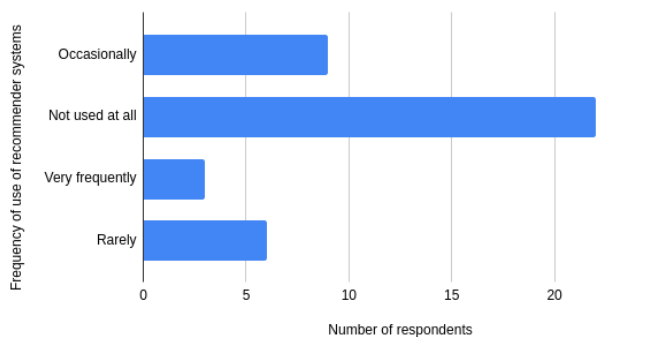


Fig. 4: Frequency of use of recommender systems by respondents

This implication of this result is that , if the university implements recommender systems, sensitization of students would be critical to ensure high usage.

V. CONCLUSION

This study has investigated the adoption and use of recommender systems at Mulungushi university. The study has shown that there is lack of awareness of these systems evidenced by the high percentage of respondents who do not know about these systems. The study has also shown that implementations of recommender systems are lacking at Mulungushi university. This study therefore recommends more research to be conducted to identify focus areas within the university that require recommender system implementations.

In future, there is need to extend this study to cover most tertiary institutions in the country and this will provide a clear picture of the status of tertiary institutions in the country as regards the adoption of recommender systems.

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