



FACULTY REFLECTIONS ON THE CAMPUS MANAGEMENT SYSTEM IN DISTANCE EDUCATION: A THEMATIC ANALYSIS

Madiha Bashir¹

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Affiliations:

¹ Ph.D. Scholar,
Allama Iqbal Open University
(AIQU), Islamabad, Pakistan
Email: madihabashir12@gmail.com

Corresponding Author's Email:

¹ madihabashir12@gmail.com

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Abstract

The concept of digital change in higher education has increased the rate of adoption of an integrated information system, which is also referred to as Campus Management system (CMS). Due to prevailing importance of CMS, we conducted this study to explore the experiences of faculty members regarding prospects and challenges of Campus Management System (CMS) in AIQU. Under this, we identified the experiences of faculty members regarding prospects and challenges of CMS. We selected 50% of the program coordinators from all departments of AIQU as sample through purposive sampling technique. Researchers conducted a semi-structured interview to collect data and then thematically analysed the whole data. Major findings of the study were that CMS promises were the auto generation of merit list, safety of data accessibility and security. On the other hand, some of the major concerns and challenges experienced by the members of the faculty were difficulty in data entry, the inability to see someone update the system in real time, inability to be very flexible in decision making, and not being provided with sufficient technical support and training. Such contemplations indicate a mismatch between what the system can provide and what user support can offer. Through the prism of Technology Acceptance Model (TAM), the results are indicative of the fact that the perceived CMS is quite beneficial, but the lower degree of the perceived ease of use makes the complete adoption a problem. Based on significant findings it is suggested that institutes should arrange training workshops for the faculty, and on modifications to the current policy to promote better usage of CMS in the distance learning model of AIQU.

Keywords: Opportunities, Obstacle, Campus Management System (CMS), Allama Iqbal Open University (AIQU), Open and Distance Learning (ODL)

1. Introduction

The integration of technology in the education system of higher learning has brought a tremendous change in the management and dispensation of academic services particularly in institutes of open and distance learning (ODL). A Campus Management System (CMS) is one of the most influential innovations in this respect because it is a digital platform allowing automating, simplifying, and centralizing numerous processes within the university, among which are students' admissions, course registration, fee payment, assignment of tutors, and monitoring of their academic progress (Abu-Dawood, Al-Harbi, & Ameen, 2020). In distance education, the CMS platforms are especially useful because they offer a systematic and convenient line of delivery to geographically dispersed faculty members who may lack capacity to access many services on campus (Zhang & Cheng, 2021).

In Allama Iqbal Open University (AIQU) which is largest and oldest distance learning institution in Pakistan CMS was implemented to modernize educational activities and to enhance efficiency in administrative aspects. What the CMS set out to do, through the digitalization of manual processes, was to increase transparency, make the operation less bureaucratic, and give students greater freedom in directing their educational experience (Ali & Ahmad, 2022). CMS was initially believed to be a positive solution to the university, considered as a potential technological innovation that will fix several problems that the school has had for years.

Nevertheless, even along with its positive aspects, the practical application of CMS has demonstrated



a variety of challenges to the faculty members. They have a complicated user interface, slow academic record updating, low levels of digital literacy among the users (particularly, rural students), and an absence of adequate support mechanisms (Khan, Rehman, & Fatima, 2019).

1.2 Statement of the problem

The proper management of academics plays a key role in running any higher education institution, mainly in open and distance learning such as at Allama Iqbal Open University (AIOU). With the technological advancements, commencement of efficient and cost-effective student support services is adapted by AIOU in 2021 under Digital Transformation Policy. such example is Campus Management System (CMS) developed by Ora-Tech systems. Due to its huge outreach across country and across borders, mass users are using CMS. Since its use no such study has conducted in the context of CMS to examine its unique operational requirements and potential obstacles which may hinder or improve user experiences with CMS. The research was aimed to know potential worth of CMS from the perspective of potential users and indicate the areas which need improvement.

1.3 Theoretical Foundations

Technology Acceptance Model (TAM) is a widely used tool to predict and explain the consumer acceptance and use of technology (Marikyan, 2024).

The TAM consists of two primary constructs: observed usages of systems (PU) and perceived usefulness of the systems (PEOU), which are presumed to directly impact users' attitude towards the use of the technology and their intentions to apply it (Lee, 2023). As the main pillar of TAM, the perceived usefulness means the extent of to which somebody considers technology as adding to his or her job performance. The perceived ease of use, on the other hand, is the level of ease in which the technological tool helps the person in one's job. TAM is an appropriate theoretical model for seeking acceptance and adoption of various technologies and it may be relevant also in investigating attitudes of faculty members and teachers towards the Campus Management System in Allama Iqbal Open University.

In the context of this study, TAM was highly relevant in addressing three objectives of this study. The first objective is directly aligned with PU and PEOU. When faculty members and faculty members experienced the benefits of CMS such as timely notifications, automated fee processing, and improved academic transparency, it reflects high perceived usefulness. Furthermore, when users found the system intuitive and user-friendly, their positive perception of ease of use enhance system acceptance.

The second objective focuses on the challenges faced by faculty members and faculty members. TAM help interpret how system-related barriers such as interface complexity, poor training, and technical glitches result in low PEOU and diminished user engagement. These negative perceptions adversely affect behavioural intention and system adoption.

Figure 1

Graphical Representation of theoretical framework

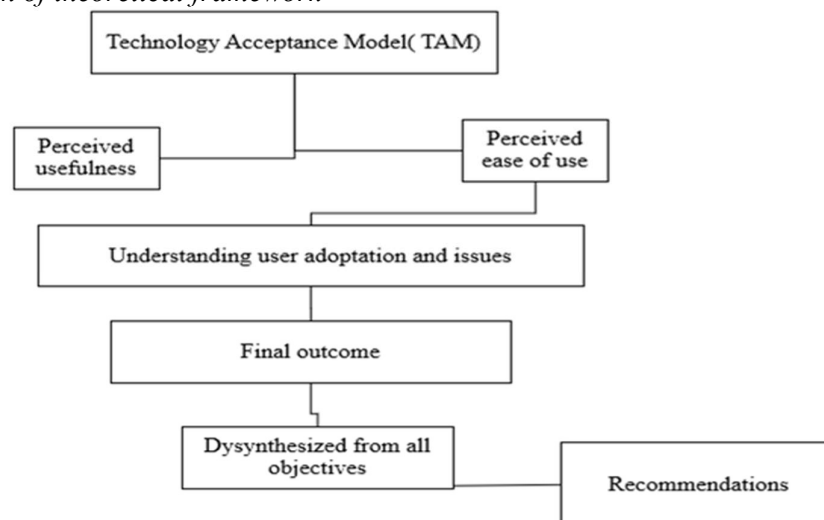




Table 1

Summary of linking theoretical framework with objectives

Research Objective	TAM Constructs Applied	Implications
Objective 1: Prospects	Perceived Usefulness (PU), Perceived Ease of Use (PEOU)	Positive user experiences result from high PU and PEOU
Objective 2: Challenges	Low PEOU, Poor system design or training affects Behavioural Intention (BI)	Barriers are explained through low perceived ease and usefulness
Objective 3: Demographic Differences	External Variables → PU & PEOU	Demographics influence perceptions of usefulness and ease of use

1.4 Conceptual framework

The concept of Campus Management System (CMS) is derived from the broader field of management information systems (MIS), which focuses on using technology to efficiently manage various aspects of an organization or institution. In the context of educational institutions like schools, colleges, and universities, CMS specifically refers to the use of software and technology to streamline administrative, academic, and operational processes (Alizebi, 2021).

The existing literature often focuses on technical deployment and institutional efficiency such as study conducted by Faisal (2021), have explored faculty members' interactions with learning management systems but lacks in-depth exploration of user experiences especially how students and faculty perceive the benefits and limitations of CMS platforms.

The first objective was to identify the experiences of faculty members regarding prospects of Campus Management System in AIOU is framed in response to this gap. The conceptual focus was on the usability, access, and satisfaction with CMS features including admission, academic processes, and communication. The second objective was to explore the experiences of faculty members regarding challenges of Campus Management System in AIOU. Previously, studies on Pakistani higher education (Huang 2020) touched on problems related to digital illiteracy, inadequate supplies, yet they rarely examined the end-user's perspective. Not much research looks at the impacts of complex interfaces, insufficient training and unhelpful technical support from the students' and teachers' point of view which the purpose of this study is to address. Keeping this concept in mind, the researcher conducted an in-depth study to explore the prospects and challenges faced by faculty members while using CMS.

For that reason, this conceptual framework connects user experiences (both positive and negative aspects) to system features (accessibility, usability and reliability), institutional guidance mechanisms (such as training, responsiveness) and aspects of users' personal backgrounds. Fusing TAM, the model looks at CMS implementation and use from various angles.

1.5 Research Objectives

1. Identify the experiences of faculty members about the use of Campus Management System in Allama Iqbal Open University in terms of its benefits
2. Explore the experiences of faculty members regarding Challenges of Campus Management System (CMS) in AIOU.

1.6 Research Questions

RQ1: What were the experiences of faculty members' regarding the CMS features that can streamline their administrative tasks and interaction with students?

RQ2: How did the faculty members experience the integration of advanced tools and technologies within the CMS to generate and finalize merit lists?

RQ3: What was the experience of faculty members about managing admission applications, entry tests, and course enrolments using the CMS?

RQ4: How did faculty members experience the challenges related to CMS in terms of timely generation of merit lists and allocation of instructors?

1.7 Delimitations of the Study



The study was delimited to the Program coordinators of MS/M.Phil. and Ph.D. from four faculties of AIOU. (Faculty of Education, faculty of science, faculty of Arabic and Islamic Studies, and faculty of Social Sciences and Humanities).

1.8 Significance and Contribution

By studying the experience of faculty members and faculty members regarding the prospects and challenges of AIOU's campus management system, it may be helpful in identification of areas that need improvement. By addressing these challenges and enhancing the prospects of the system, AIOU may provide better support and learning environment to its students and faculty members. By improving the operational effectiveness and efficiency of the campus management system can help AIOU to utilize its human, material and financial resources to the optimal level.

In the non-formal system of education, the CMS can facilitate the students an easier access to the faculty and completing different tasks. A CMS can provide valuable insights through data analytics, helping university administrators make informed decisions related to academic planning, resource allocation, and strategic initiatives. The findings of this study can be used to identify the technological gaps and may lead to upgrades and improve the Information technology infrastructure of AIOU. By exploring the experiences of students and faculty, this research study can provide insights into their needs and concerns regarding the CMS, fostering better acceptance and engagement.

2. Literature Review

2.1 Open and Distance Learning System

Open and Distance Learning (ODL) has transformed from traditional correspondence-based education into a technologically mediated system that bridges geographical, financial, and social barriers. Core characteristics of ODL include physical separation between instructors and learners, structured instructional materials, mediated communication, and robust institutional support (Fidalgo et al., 2020). Contemporary ODL leverages internet-based platforms, mobile technologies, and integrated information systems to facilitate asynchronous learning and flexible participation. Research indicates that student perceptions of distance education are significantly shaped by technological experience, accessibility, and the quality of interaction within the learning environment (Fidalgo et al., 2020). Furthermore, Olney et al. (2021) emphasize that effective ODL requires professional competencies in learning design, communication, and collaboration, highlighting that institutional success depends not only on technology but also on human capacity and organizational preparedness.

2.2 Technology Adaptation and Evolution in Open and Distance Learning

The technological evolution of ODL has progressed through several distinct phases, beginning with printed correspondence materials, advancing to radio and television broadcasting, and subsequently transitioning to computer-mediated communication and web-based platforms. More recently, Learning Management Systems (LMS), cloud computing, mobile technologies, learning analytics, and artificial intelligence have created increasingly integrated digital learning environments (Choi-Lundberg et al., 2023). A systematic review of digital innovations identified LMS, mobile learning, Web 2.0 technologies, simulations, virtual/augmented reality, and gamification as major contemporary technologies. Shurygin et al. (2021) demonstrated that modern e-learning platforms can effectively support personalization, interaction, and real-time feedback. However, this technological expansion has introduced institutional challenges, including infrastructure requirements, connectivity reliability, digital competence gaps, and the need for organizational readiness, issues that are particularly acute in developing contexts (Fernández-Batanero et al., 2022; Bond et al., 2021).

2.3 Campus Management System in Distance Learning

A Campus Management System (CMS) functions as an integrated institutional information platform that supports academic, administrative, and operational processes. Depending on design specifications, a CMS may incorporate admissions, registration, student records, course management, examination scheduling, financial administration, and communication tools. In ODL settings, the significance of CMS is magnified because learners and faculty are geographically dispersed and rely heavily on electronic services for institutional engagement (Abu-Dawood, Al-Harbi, & Ameen, 2020). The integration of academic and



administrative processes into centralized digital environments reduces duplication, streamlines information flow, and enhances institutional efficiency. Research on system adoption indicates that quality, perceived usefulness, ease of use, and user satisfaction are critical success factors (Cavus et al., 2022; Yakubu et al., 2020). While LMS primarily focuses on teaching and learning, a CMS encompasses broader administrative functions, creating a comprehensive digital ecosystem. In the Pakistani context, Khan et al. (2025) found that AIOU distance learners reported positive perceptions of system quality and satisfaction, underscoring the relevance of CMS in local ODL environments.

2.4 Prospects of Campus Management System

Enhancing Administrative Efficiency: A primary prospect of CMS is the automation of repetitive academic and administrative processes, including admissions, record-keeping, scheduling, and reporting. Automation reduces manual workload and allows academic personnel to redirect time toward teaching and student support. According to Davis's (1989) Technology Acceptance Model (TAM), users are more inclined to adopt technology when they perceive it improves job performance, a finding consistently supported in educational contexts (Granić & Marangunić, 2019).

Streamlining Communication: CMS facilitates structured institutional communication through electronic notifications, centralized messaging, and accessible academic records. This is particularly valuable in ODL, where physical distance limits informal interaction. Fernández-Batanero et al. (2022) identified communication and interaction as critical dimensions of online education experiences, suggesting that well-designed CMS can address these challenges effectively.

Reducing Administrative Burden and Supporting Processes: Automation can alleviate routine responsibilities, yet digital transformation simultaneously creates new tasks such as data entry and system monitoring (Abdalla et al., 2021). CMS also supports pre- and post-admission processes, enabling efficient application handling, document verification, and merit-list preparation, which is crucial for large ODL institutions with geographically distributed learners. Additionally, CMS contributes to curriculum management by providing data for course planning, instructor allocation, and academic scheduling (Olney et al., 2021). The integration of learning analytics further allows faculty to monitor student engagement and performance, enabling timely interventions (Application of Learning Analytics study, 2023). Collectively, these prospects underscore the potential of CMS to transform institutional operations and enhance service quality.

2.5 Challenges of Campus Management System

Pedagogical and Integration Concerns: Faculty members exhibit varying levels of digital competence, confidence, and willingness to integrate technology into established teaching practices. Solórzano et al. (2022), in a large international study, identified considerable variation in digital competence among academics, emphasizing the need for institutional policies and professional development. Course materials developed for face-to-face or print-based delivery often require significant redesign for digital platforms, demanding pedagogical knowledge, time, and institutional support (Olney et al., 2021).

Time, Workload, and Training Constraints: Training is essential for effective technology adoption, as perceived ease of use is a key determinant of acceptance (Venkatesh, 2000). Waris and Hameed (2023) found that interface design, innovativeness, and facilitating conditions influenced Pakistani faculty members' intention to use LMS, recommending targeted training programs. Furthermore, digital systems can increase workload; Abdalla et al. (2021) reported higher preparation time among faculty, while Allen et al. (2022) found that technical failures and connectivity issues contributed to duplicated work and elevated stress levels.

Quality Assurance and Assessment Challenges: Online assessment introduces concerns regarding academic integrity, authentication, privacy, validity, and fairness. Garg and Goel (2022) identified security and integrity as major challenges, emphasizing that effective assessment depends on design, policy, and faculty competence rather than technical availability alone. Monitoring student progress through CMS also requires analytical skills and adequate time for data interpretation and timely intervention (Application of Learning Analytics study, 2023).

2.6 Technical and Infrastructure Challenges

Technical infrastructure remains a critical factor influencing CMS effectiveness. Reliable internet



connectivity, adequate devices, system stability, user-interface design, and responsive technical support are essential for positive user experiences. Fernández-Batanero et al. (2022) identified unstable connections, limited resources, insufficient competence, and inadequate support as major barriers. The digital divide exacerbates unequal user experiences, making CMS implementation a complex interplay of technology, human capacity, and organizational readiness. Mhlongo et al. (2023) emphasized that contextual factors—including infrastructure and institutional preparedness must be carefully addressed to realize the benefits of smart digital technologies in learning environments.

2.7 Technology Acceptance Model and Campus Management System

The Technology Acceptance Model (TAM), developed by Davis (1989), provides a robust theoretical framework for examining CMS adoption. TAM posits that Perceived Usefulness (PU), the belief that a system enhances job performance, and Perceived Ease of Use (PEOU), the belief that using the system is free of effort, are primary determinants of behavioral intention and actual system use. Extensive research confirms the relevance of PU and PEOU across diverse educational technologies and user groups (Granić & Marangunić, 2019). Venkatesh (2000) further demonstrated that PEOU is influenced by experience, self-efficacy, facilitating conditions, and anxiety, while Venkatesh and Davis (2000) extended TAM to include social influence and job relevance as antecedents of PU. In the Pakistani higher education context, Waris and Hameed (2023) validated TAM by showing that ease of use, interface design, and facilitating conditions significantly influenced faculty members' intention to adopt LMS. Applying TAM to this study allows interpretation of CMS prospects through the lens of high PU and challenges through low PEOU, providing a coherent theoretical structure for understanding faculty acceptance and resistance.

2.8 Research Gap

The reviewed literature robustly establishes the potential of digital systems to improve access, administrative efficiency, communication, and learner support in higher education (Cavus et al., 2022; Choi-Lundberg et al., 2023). However, a significant contextual gap remains concerning faculty members' direct experiences with Campus Management Systems specifically for academic and administrative decision-making within Pakistan's ODL sector. Existing studies predominantly focus on LMS adoption, student perspectives, or broad digital transformation, lacking in-depth exploration of CMS prospects and challenges from the viewpoint of program coordinators responsible for critical processes such as merit-list generation, tutor allocation, and admission management.

3. Methodology

This section presents the comprehensive methodological framework employed to investigate the intersection of behavioural economics and household financial decision-making. Given the multifaceted nature of the research problem, which encompasses cognitive biases, psychological heuristics, and their consequences for household welfare and economic stability, a multi-method research design is adopted.

3.1 Research Philosophy and Approach

Research Paradigm. The study employs an interpretivist (constructivist) research paradigm.

Research Design. The qualitative research design was used for this study. The study was conducted by using a semi-structured interview to collect qualitative data from the faculty members.

3.2 Population and Sample

Target Population. Faculty members of all the departments of AIOU who were dealing with the CMS (MS/M.Phil. and Ph.D. program coordinators). The description of the Population is shown below in the Table.

Table 2

Description of Population

Sr. No.	Name of Faculties	Number of MS / M.Phil. Scholars	Number of Ph. D Scholars	Number of Faculty members
1.	Faculty of Arabic and Islamic Studies	29	08	04
2.	Faculty of Education	84	15	10
3.	Faculty of Sciences	48	24	12
4.	Faculty of Social Sciences & Humanities	81	10	10
Total		242	57	36



Sample and Sampling Strategy. As there are four faculties (Faculty of social Sciences and Humanities, Faculty of Education, Faculty of Sciences and Faculty of Arabic and Islamic Studies), and each faculty has departments. The researchers' concern (purpose) was towards those faculty members (program coordinators) who were dealing with CMS. Hence, 50 % of the faculty members (N=36) using CMS as M.Phil. and Ph.D. coordinators were the sample for this study. So purposive sampling was used to select the faculty members, i.e. two faculty members of each department were engaged in CMS, that is one dealing with M. Phil program while the second dealing with Ph. D program. Therefore, Purposive sampling technique was used to select the sample of faculty members.

3.3 Data Collection Instruments

A semi-structured interview was conducted in person to collect the data from the faculty members (program coordinators) who were directly involved in CMS. Respondents were briefed about the objectives of the study. The interview was consisted of semi-structured questions that were designed in English language. Questions were elaborated in Urdu too for their full understanding. The questions were related to the prospects and challenges of using CMS in perspective of faculty members e.g. admission process, streamlined application handling, and tutor allocation streamlined application handling, and tutor allocation, course management and suggestions for improving the system. Informed consent to participate in interview was sought from all participants. The interviews were conducted by considering interview protocols. All Interviews were recorded by different techniques. Some interviews were manually recorded through paper-pencil technique as some participants refused for audio recording. Few interviews were audio recorded. Due to busy schedule, some respondents also preferred to answer by writing by themselves

3.4 Data Collection Procedures

Qualitative data was analysed by using thematic analysis. Following procedure of thematic analysis was used.

- 1) The researcher collect data and transcribe the whole interview of each participant.
- 2) The researcher made repeated readings to the interview transcripts to search for the meanings, patterns, themes and codes. During reading the main themes and ideas were marked for coding.
- 3) After reading the interview transcripts, the initial codes were generated from the underlined themes and ideas.
- 4) The themes were generated according to each interview question asked from the respondents and codes generated. Different codes were combined into potential themes

The final themes were defined and named properly for final analysis of data.

3.5 Data Analysis Methods

Quantitative Analysis. The qualitative data from semi-structured interviews are analysed using thematic analysis, following the approach developed by Colarieti et al. (2024). The analysis proceeds through six phases: familiarisation with the data through repeated reading of transcripts, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report.

3.6 Ethical Considerations

The researcher adhered to strict ethical guidelines throughout the study to protect the rights, dignity, and well-being of all participants. Prior to data collection, written informed consent was obtained from all faculty members after they were fully briefed about the purpose, procedures, and voluntary nature of the study, and they were clearly informed of their right to withdraw at any stage without any negative consequences. To ensure anonymity and confidentiality, all participants were assigned pseudonyms (e.g., R01, R02, etc.) and any identifying information was removed from transcripts and the final report, while all data including interview recordings, transcripts, and field notes were stored securely in password-protected files with access restricted solely to the researcher and the research supervisor.

4. Results

4.1 Perceptions of faculty members regarding prospects of CMS (Objective 1: Research question 1, Research question 2)

The first objective was Identify the perceptions of faculty members and faculty members regarding Prospects of Campus Management System (CMS) in AIOU. In addition, the first research question related to

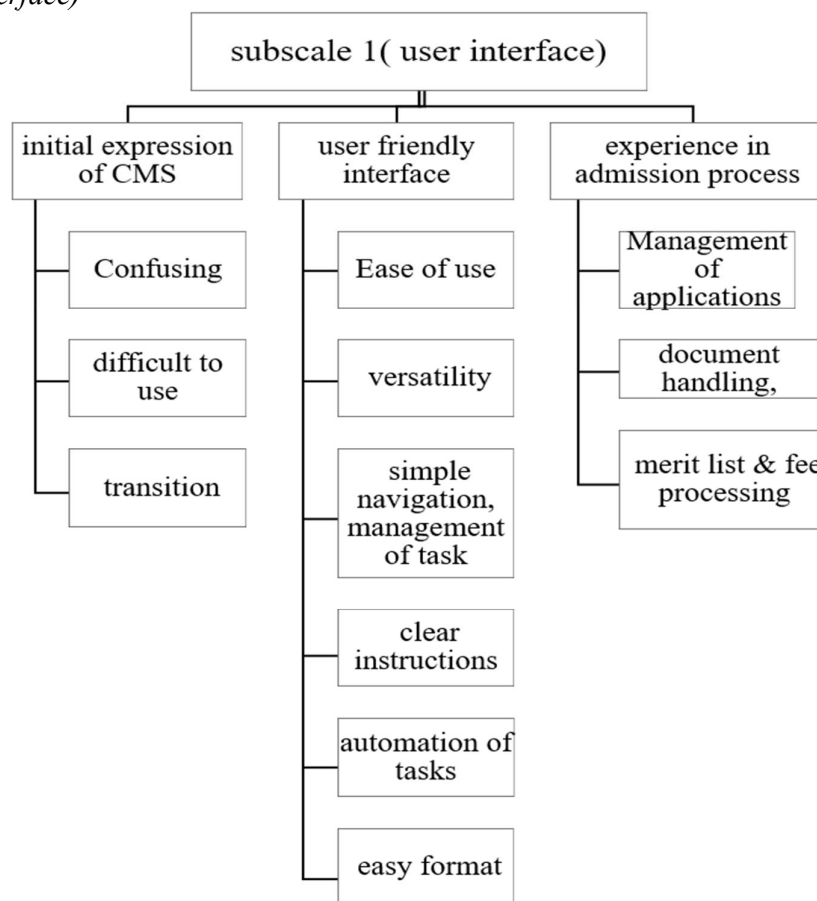


this objective was: What is the experience of faculty members regarding the CMS features that can streamline their administrative tasks and interaction with students? There were 3 subscales made under this question. Subscales 1, 2 and 3 are related to 1st research question of 1st objective of this research study. The second question of objective one was “How faculty members experience the integration of advanced tools and technologies within the CMS to generate and finalize merit list? There was only one scale made under this question. Subscale 4 was related to 2nd research question of 1st objective of this research study.

Subscale 1: Experience regarding CMS interface. In subscale 1 (experience regarding CMS interface), faculty members were asked about the initial expression of CMS interface and ideal preference the CMS interface to look like. Based upon the transcription of each respondents’ views on this subscale, following 3 themes and 12 codes were generated. The details of themes and codes are given below in figure

Figure 2

Subscale 1(user interface)



Theme 01 (Initial expression of CMS). Initial expression means the reaction and feelings of faculty members when they first encounter the CMS interface. This theme indicated that majority of the faculty members got confused when they initially looked at the interface of CMS. Some statements on this theme were as follows:

A few faculty members said that it is difficult to use, we need technical support to use it. *R 11 said that: “It felt like I needed technical support and expertise just to perform simple tasks”.* Some of the respondents said that the interface is confusing due to transition of system. *R 16 said that: “Switching from the manual system to CMS was very frustrating initially”.* This theme concluded that initially most of the faculty members faced difficulty because it was a new experience for them, and it was also difficult due to transition of system.

Theme 02 (User friendliness). This theme is based on the extent to which the Campus Management System (CMS) is easy to use and is accessible to the faculty members. It included features like usability,



adaptability, and effectiveness in completion of activities that make up a certain design. The codes in this theme highlighted the system's ability to simplify processes and provide clear instructions. In the analysis of this theme, it is noticed that few of the faculty members feel it is easy to use and easy to operate. R 03 said that: *"I like that the interface is easy to operate. I did not take long time to figure out how to use it after my first attempt. There were clear instructions on CMS. The format of CMS is very easy to understand.* Majority of the faculty members felt the CMS versatile and simple to navigate and helpful in management of tasks. This theme concluded that after using CMS more than one time, most of the faculty members found it user friendly.

Theme 03 (experience in admission process). This theme is based on the practical utility and user experience of CMS features during the admission process. It is about how effectively the system supports core tasks, including application management, document handling, challan generation, merit list preparation, and fee processing. Majority of the faculty members found it easy, helpful and manageable in different tasks e.g. handling applications, documents, challan generation and merit list finalization process. R01: *"The CMS helped me track the status of students' application in real-time. It made it easy for me to handle the application and admission process overall"*. R 14: *"Generating a challan took just a few clicks, which was very convenient. I felt it easy to generate challans. I also felt the process of merit list generation is easy because I face no difficulty overall in the whole process"*. Overall, initially some faculty members faced difficulty but later on it became easy for them due to continuing practice.

Subscale 2: Communication with students

In subscale 2 (Communication with students), faculty members were asked about the experience of communication with students. Based upon the transcription of each respondents' views on this subscale, 1 theme, and 6 codes were generated based on transcriptions of each respondent 'views on this subscale. Details are given below in figure.

Theme 04 (Interaction with students). Respondents presented diverse experience benefits of using the CMS that was categorized into more areas, the first was clarified notifications received or sent by faculty members and 2nd was about alerts for admission. Few respondents pointed out that the system enabled them to make clear and timely notifications to the students about their admission status, interview etc.

R02: *"All admission-related updates were shared without delays, which was great". I received queries and other notifications in time and message was sent to students immediately after clicking on the button*

R 05: *"I used the CMS to address issues related to the missing or wrong documents supplied by the students at the time of admission. In this way, the CMS helped the faculty members separately address certain issues related to the students' submissions in their courses as well as to inform a student about any inconsistencies within a short time span"*. Overall, it is concluded that the faculty members found in favor of supportive communication between faculty members and faculty members.

Subscale 3: Effectiveness in task management

In the subscale 3 (effectiveness in task management), faculty members were asked about the CMS effectiveness in managing different tasks. Based upon the transcription of each respondents' views on this subscale, following 3 themes and 13 codes were generated. The details of themes and codes is given below.

Theme 05 (Effectiveness in different task management). This theme highlighted the experience of faculty members regarding efficiency and utility of the CMS in managing critical tasks related to the admission process. It reflects the system's role in reducing manual workload, enhancing accuracy, and streamlining operations such as application management, merit list generation, and document verification. The codes under this theme emphasize how the CMS minimized errors and accelerated processes, making task management more effective and reliable for users.

R 01: *"The CMS eased the process of managing applications, particularly enhanced the admission applications of management and minimize the manual operational effort required in the course of the working process"*.

Majority of the respondents valued the fairness and transparent way of merit list generation. R 15: *"Merit list preparation was quick and accurate through the CMS"*.

R 17: *"There were no manual calculations required, which reduced errors"*. The faculty members stated that it was easy for them to make merit lists according to the selection criteria. This theme concluded



that most of the faculty members found CMS effective in managing different tasks.

Theme 06 (Streamline system). This theme addressed the CMS's role in creating a seamless and efficient workflow for academic and administrative tasks. It emphasized the system's capabilities in course scheduling, departmental support, and tracking and monitoring of various academic activities. The codes highlight how the CMS simplified these processes, ensured better coordination and management within the university system. Few faculty members stated that it was easy to adjust the schedule of courses.

Majority of the respondents said that departmental support made tasks easy for us so we could resolve any kind of issue easily. R 16: *"It was easy to coordinate with my department for course-related queries. There was always a backup had from both the BASAR and IT teams that effectively improves the functionalities of the CMS and to the extent of making certain that faculty members seeking the care have their requests fulfilled immediately without necessarily experiencing any delays, making the CMS more dependable in terms of its usability"*.

Few of the respondents stated that tracking and monitoring made things easy for them. This theme concluded that due to departmental support, the coordination gets stronger, and it helps in simplify and streamline the whole process.

Theme 07: Access and control. This theme focusses on the CMS's measures for ensuring secure and controlled access to the system. It highlights the importance of safeguard sensitive information and maintaining a trustworthy environment for users. The codes under this theme reflected users' experience of how the system provides controlled, secure, and reliable access to its features while protecting their data.

Majority of the respondents emphasized the importance of robust username and password protocols that facilitate secure access to the CMS and integrated Learning Management System (LMS). R 02 stated that *"This system not only enhances security but also allows faculty members to manage their courses and student interactions effectively. By implementing strong access controls, faculty can safeguard sensitive information and ensure that only authorized users can access specific functionalities within the CMS"*. R 12: *"The security, access and control measure enhanced overall trust in the system, allow users to engage with the CMS confidently, by knowing their data is protected"*. It is concluded that faculty members were very satisfied with the privacy of their login and password. Nobody can access and control due to strong access and security.

Subscale 4: Experience with Advanced Tools Integration:

This subscale explores the users' experiences with advanced tools integrated into the CMS, particularly focusing on the enhanced verification system and its functionalities. It highlights how automation and comprehensive data analysis capable within the CMS contribute to efficient and accurate operations. Based upon the transcription of each respondents' views on this subscale, following 2 themes and 5 codes were generated. The details of themes and codes is given below.

Theme 08: Enhanced Verification System. Majority of the respondents stated that the CMS has an enhanced verification system. R 09 explained that: *"Admission application in the system was checked and confirmed while noncompliant with the set standard is highlighted"*. R 18: *"The automated verification helps to cut down the number of manual checks done by the particular faculty members and it make the system faster and very efficient"*. Majority of the respondents said that the system's ability to generate data insights allows faculty members to make informed decisions regarding admissions, course allocation, by consolidating data into actionable reports, the CMS support efficient decision-making, facilitate trends analysis and identify areas that need improvement.

R 14: *"The data analysis tools provided a level of accuracy that manual methods couldn't achieve. The integration of analytics tools gave us a significant edge in task management"*. In result of the analysis, it can be said that faculty members were satisfied because CMS interface cut down their burden in many tasks.

Theme 09 (Tutor allocation). This theme is about how users experience the CMS in as far as the allocation of tutors is concerned. Majority of the respondents emphasized that the system made the

process easy, clear, and effective at the same time as it encourages co-ordination among workers. For this reason, the codes underscore how the CMS work to eliminate biases and enhance procedural tutor distribution 03: *"The streamline allocation efficiency is largely attributed to the centralized resource management feature, which allows for better oversight and organization of available resources"*.



Some respondents also said that CMS allows all faculty members to collaborate to complete different tasks. R11: *"The CMS allowed all team members to review and finalize tutor allocations together. It improved coordination among departments while deciding tutor assignments"*. R14 *"The system ensured everyone was on the same page regarding tutor allocation"*. It is concluded that CMS made the whole process of tutor allocation easy and clear. There is no chance of biased allocation.

4.2 Experience of faculty members regarding challenges of CMS (Objective 2: Research question 1, Research question 2)

The second objective was Identify the experience of faculty members and faculty members regarding Challenges of Campus Management System (CMS) in AIOU. In addition, the first research question related to this objective was: What is the experience of faculty members about managing admission applications, entry tests, and course enrollments using the CMS? There were two subscales were made. Subscale 5 (experience with managing admission applications) and subscale 6 (handling enrollment) were made under the 1st research question of 2nd objective of this research study. The second question of objective one was "How faculty members experience the challenges related to CMS in terms of timely generation of merit lists and allocation of instructors? There were only three subscales made under this question.

Subscale 5: Experience with Managing Admission Applications: This subscale examines the challenges faced by faculty members while managing admission application. It focusses on difficulties or challenges related to the system interface, communication barriers, inadequate training of faculty members and delay in notifications. It also highlights the issue related to incorrect contact information and how those factors impact the admission process's efficiency. Based upon the transcription of each respondents' views on this subscale, following 2 themes and 3 codes were generated. The details of themes and codes are given below.

Theme 10 (User interface complexity). User Interface Complexity is the theme that covers the problems resulting from the organism's interface; several faculty members described the CMS as Confusing. Few respondents mentioned this type of confusion which may affect the navigation and usability of the system and faculty members' engagement with the system. R 01: *"A complex design of the interface narrows down the ability to process information as well as execute tasks, making it clear that there is a need for change in design"*. This theme concluded that the CMS is still a bit confusing and difficult to use. There is a need to make it simple.

Theme 11 (Communication barriers). Majority of the respondents said that we found communication barrier. R05: *"I face difficulty while communication with students because sometimes message was not sent and delayed due to system inefficiency"*. R 09 said that: *"the delayed messages and notifications cause stress"*. R 13: *"I miss deadlines due to late alerts. Sometime the system stuck that cause late messages and notification and create a communication barrier"*. R18: *"correcting contact details was a difficult process in the system"*. This theme concluded that sometimes, communication between students and teachers become difficult due to delay of messages and notifications.

Subscale 6: Handling Enrollments:

This subscale explores the challenges faced by faculty members when managing and handling enrollment process through the CMS. It focuses on IT related issues, delay in system updates, lags in admission workflow and late inclusion of students. There was 1 theme and 3 codes were generated. The details are given in the figure below.

Theme 12: (IT related Issues). This theme refers to technical problems such as system crashes, bugs, and other challenges that hinder enrollment management.

Majority respondents stated that we face technical issues while handling R 07: *"Delay in system updates caused confusion among staff and students. Sometimes the system took too long to reflect status changes in applications"*. R 12: *"Enrollment notifications were delayed hence, some students enrolled after classes had commenced. There is need to enhance notification on enrollment processes"*. It is concluded that majority of the faculty members faced IT related issues which created difficulties in completion of tasks.

Subscale 7: Challenges with Merit List Generation

In the subscale 7 (challenges with merit list generation), the faculty members asked about many



obstacles users faced while generating merit lists on CMS. This subscale highlights issues such as data entry complexity, difficulties in handling data, time consuming process, the absence of a GPA feature, and challenges related to marking distribution. Based upon the transcription of each respondents' views on this subscale, following 1 theme and 4 codes were generated. The details of themes and codes is given below.

Theme 13 (Data entry complexity). The theme data entry complexity refers to the difficulty to enter large volume of data into CMS. Majority of the respondents highlight the difficulty they face while entering the data. R 01 said that *"It is difficult to add all the data of students.it is a tedious process"*. R 02: *"I often had to recheck entries because the system did not validate it"*.

Few respondents face difficulty in handling data as R 05 stated that *"sorting and filtering students' data was confusing for me"*. Some respondents highlight that it becomes difficult for us to distribute marks while generating merit list. It became difficult to convert data from percentages to GPA". R 08: *"Due to absence of GPA icon, it became difficult to convert percentage to GPA to meet the criteria of marking"*. This theme concluded that many of the respondents were confused in the process of sorting and filtering data.

Subscale 8 (Allocation of instructors)

In subscale 8 (allocation of instructors), faculty members were asked about the challenges related to allocation of tutors using the CMS. It elaborates on issues such as limited flexibility in allocation process, limited human resources, and the resulting frustration among faculty members. Based upon the transcription of each respondents' views on this subscale, following 1 theme and 3 codes were generated. The details of themes and codes is given below in figure 4.8.

Theme 14 (Limited Flexibility). Due to the central regulation of the system, it becomes very difficult to match the instructors with their fields of specialization, or the nature of the courses being taught. Of course, this lack of adaptation might lead to instructor-course matches that are far from optimal and this will impact on the efficacy of learning in classes. R 09 stated that: *"it became difficult to allocate tutors due to lack of resources"*. R 10: *"Technical constraints negatively affect the efficiency of the allocation process and may result in wrong distribution of courses or confusion about the placement of particular tutors"*.

Few respondents said that there is a barrier in allocation of tutor is the change of coordination. R 07: *"I think the new coordinators encounter some problems in integrating into the program and organization thus affect the functionality of structures like the CMS"*. R 04: *"Allocation of tutor became difficult sometimes due to lack of coordination among staff and departments. It creates frustration among staff"*. It is concluded that the faculty members face the challenge of lack of coordination among faculty members and departments which affects the functionality of procedure.

Subscale 09: Suggestions for Improvement:

In subscale 9 (suggestions for improvements in CMS), faculty members were asked about the possible improvements in CMS and ideal preference the CMS to look like. Based upon the transcription of each respondents' views on this subscale, following 3 themes and 4 codes were generated. The details of themes and codes is given below. To address the challenges highlighted, the following suggestions and improvements were recommended.

Theme 15: Suggestion to Enhance User Interface. The theme of Enhanced User Interface was aimed at the idea of improving interfaces in the Campus Management System (CMS). This theme highlights how easy navigation can become a major positive turning point for the side of educators and officials. Simplification of the design places less strain on the navigation of the system and enables the users to find the different components of the system or achieve a specific goal in the shortest time possible. Majority respondents said that there is a need to enhance the user interface and make a simple design. R 04 said that: *"I think the layout must be easy, and it should be simpler for faculty members"*.

R 07: *"I think numbers of click should reduce to access key features easily. The developer should also allow users to create shortcuts"*. This theme concluded that layout of CMS should be simpler in terms of design and access to key features.

Theme 16: Comprehensive Training. The idea of the Comprehensive Training Programs relates to structured training sessions of users of the Campus Management System (CMS). This need is expressed by eight respondents (R1, R3, R4, R5, R6, R7, R11, and R13) and it demonstrates that well-organized training is



of great value to facilitate understanding of what the CMS can offer. As a result of an understandable approach that is structured, new faculty and staff training should prove to be smoother than the previous mode. R 03: *“Extensive training programs should be conducted for the purpose of raising awareness of the users and achieving high levels of system utility in order to facilitate the academic processes”*. R 11: *“There is a need of refresh training for faculty members”*. It is concluded that there is a need for training for faculty members to use CMS properly.

Theme 17: Improved Technical Support. The theme of Improved Technical Support highlights the critical role of responsive IT support in enhancing the user experience with the Campus Management System (CMS). With feedback from eleven respondents (R1, R2, R5, R6, R7, R10, R11, R12, R14, R15, R16), it becomes clear that timely and effective technical assistance is essential for resolving issues that users encounter while navigating the system. This support fosters a more efficient working environment by minimizing downtime and frustration, thereby allowing users to focus on their academic responsibilities.

5. Findings

Based on first objective, 2 research questions and 4 subscales were made to collect and analyze data from faculty members. Majority of the respondents found confused interface but after frequent use, they felt it was easy to use the interface. The ease of use demonstrated that the system has a learning curve, but it becomes easy once the user operates it. The users were satisfied with the simple design and dashboard layout of CMS interface. Few respondents found the admission process easy and transparent. Only few respondents felt the admission process was easy, so it means that there is a need for training for faculty members regarding admission process. The result showed that few respondents found that system made them able to make clear messages and timely notification to students. Majority of the respondents favored the ease of process in managing different tasks. It was found in the result of theme 6 (streamline system) that majority of the faculty members were in favor of the CMS role in creating a seamless and efficient workflow for academic and administrative tasks. From a researcher's perspective, this highlights the importance of technological implementation which helps to make workflow easy. The respondents liked the access and control of username and password. The value of strong security and control-built trust and ensure user compliance with system usage.

Based on first objective, 2 research questions and 5 subscales were made to collect and analyze data from faculty members. Very few respondents reported that user interface was complex and difficult to use. It indicates that most of the respondents adapt to the system. Theme 11 (communication barriers) showed that majority of the respondents face challenges in communication with students due to delays of messages and notification and wrong contact information of students. Half of the respondents reported that bugs in software made it hard for them to process and complete different tasks efficiently. Every software has few glitches which can be removed by updating the software. The result showed that majority of the respondents highlighted the difficulty in data entry. They found difficulty in sorting and checking entries repeatedly which made the process of merit count difficult for them. Some of the respondents reported lack of flexibility in tutor allocation and lack of resources which made it difficult to allocate concerned tutors. From a researcher's perspective, there is a need to hire tutors from other topnotch institutes if needed to fulfill the requirement. It was found that very few respondents suggested to enhance the interface of CMS. The results of theme 16 (comprehensive training) showed that most of the respondents suggested conducting comprehensive training for faculty members. Majority of the respondents suggested that there should be strong technical support for faculty and faculty members also so it would be easy to use CMS without any difficulty.

6. Conclusion

Initially, the CMS interface was challenging and confusing for more faculty members, later continuous use of CMS brought familiarity and a user-friendly adaptation of the software. It is also helpful in application tracking, challan generation, and merit list processing. Communication through CMS was clear but lacked efficiency during high-pressure periods. The Campus management system could streamline academic and administrative tasks. It is effective for faculty members to manage diverse responsibilities. Faculty members benefitted from the easy access of features and enhanced verification mechanisms, which not only built trust but also minimized manual work. CMS supports internal collaboration and administrative efficiency. It also



supports the systematic approach to tutor allocation is effective to improve coordination among departments.

Based on the results of subscale 5,6, it is concluded that CMS is confusing and difficult to use especially in processing admission applications and handling enrollments. Communication with students via CMS is challenging. The language on CMS to process new admissions is complicated for faculty members which they do with external help. There is still a need to make it simple. CMS burdens the faculty members with high workload as digitization has created technological challenges which demand faculty members to do additional manual data entry processes. There are many sections on CMS regarding admission application handling which are not user friendly, demand manual data entry, improper auto-SMS service to applicants, and lack of GPA-based sorting. Tutor allocation process is limited due to lack of resources and wrong distribution of courses and weak coordination among faculty members which creates frustration especially for new coordinators.

7. Recommendations

1. Findings of the study regarding guidance on CMS regarding CMS interface the researcher recommend that there is a need to develop training resources, including video tutorials and step-by-step guides, to assist users (faculty members and faculty members) in navigating the CMS.
2. There is a lack of GPA icon CGPA so it is recommended that AIOU may add these icons on CMS interface.
3. Overall, it is recommended by researcher and suggested by faculty members to establish ongoing feedback channels, such as surveys or user forums, to regularly gauge user satisfaction and gather insights on areas for improvement. This may enable the CMS team to proactively address user concerns and enhance the system.
4. Future research should include a larger and more diverse sample, incorporating regional campuses and distance faculty members from different provinces, to improve generalizability of findings related to the CMS experiences.
5. It is recommended for future researchers to conduct series of study to find the effectiveness and efficiency of user training programs on CMS usability.

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Data Availability

The datasets generated during and analysed during the current study are available from the corresponding author on reasonable request.

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