ASSESSING CURRENT SYSTEMS AND ESTABLISHING DIGITAL REQUIREMENTS FOR PART-TIME LECTURER PAYMENT TRACKING IN KENYAN PUBLIC UNIVERSITIES

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ABSTRACT

*This article examines the current systems utilized for tracking part-time lecturer payments in Kenyan public universities and establishes the necessary requirements for a digital tracking system to address identified deficiencies. The prevalence of delayed, partial, or non-payment for part-time lecturers in these institutions results in significant financial strain, potentially leading to **debt**, and **insolvency** for individuals. Simultaneously, universities face challenges including damage to reputation, demotivated staff impacting education quality, and financial losses through inefficiencies like double payments. Drawing on a descriptive research approach utilizing surveys and questionnaires among part-time lecturers and administrative staff in selected Kenyan public universities, the study's findings reveal that existing payment management systems are predominantly manual or spreadsheet-based, lack unique identifiers for claims, and critically, employ no effective **tracking technology**. This results in document loss, inability to track claims, and significant delays. Based on identified user and administrative needs, the study establishes comprehensive requirements for a **digital** tracking solution. Key requirements include web-based and mobile accessibility, automated claim processing and payment calculation, real-time claim status tracking and notifications, integration with existing university systems, enhanced security, and overall usability. The findings underscore the urgent need for a dedicated digital system to provide transparency, efficiency, and accountability in part-time lecturer payment processes, mitigating financial precariousness for lecturers and improving administrative functions for universities. Future research could explore the integration of advanced techniques such as artificial intelligence - **AI** for predictive budgeting or **digital** ledger technologies to enhance transparency and prevent financial irregularities, further addressing issues related to debt and financial stability.*

Keywords: *digital tracking, debt, insolvency, AI, digital, tracking system, part-time lecturers, payment, Kenya, requirements, university.*

1. INTRODUCTION

Undergraduate and postgraduate studies represent a significant academic milestone, often culminating in examinations, term-papers and a thesis. Teaching and research is fundamental to advancing knowledge across disciplines. In universities globally and in Kenya, the engagement of part-time lecturers has become a widespread practice, driven by factors such as institutional expansion and the need for specialized skills.[1] This cadre of academic staff plays a key role in teaching and learning processes. While part-time lecturing offers flexibility and brings industry experience to students, managing their payments has emerged as a significant challenge in many institutions, particularly in some African and Kenyan contexts.

In Kenyan public universities, despite the crucial role played by part-time lecturers, issues surrounding their remuneration, including delayed payments, partial payments, and sometimes outright non-payment, are frequently reported.[2] These payment inconsistencies not only cause considerable financial distress for the lecturers but also impact their morale and, consequently, the quality of education provided to students.[3] Furthermore, universities face administrative complexities, including mismanaged records, risk of financial loss through errors like double payments, and reputational damage. Although information technology has been increasingly adopted to automate administrative and academic functions in Kenyan universities, the specific process of tracking part-time lecturer payments often remains inefficient and opaque.[4] This lack of transparency and effective tracking necessitates physical follow-ups by lecturers, consuming valuable time and resources. Addressing this gap requires a thorough understanding of the existing systems and the specific requirements for a modern, efficient payment tracking solution.

2. Research Problem Statement

Ideally, part-time lecturers in Kenyan public universities should experience a seamless and transparent payment process, ensuring timely and accurate remuneration for their services without the need for arduous physical follow-ups. Universities, in turn, should possess efficient and reliable systems that allow for accurate budgeting, prevent financial errors, maintain staff morale, and uphold institutional reputation. The reality, however, is that the current systems and methods employed for managing and tracking part-time lecturer payments in these institutions are largely manual, fragmented, and lack robust tracking capabilities. This deficiency directly contributes to persistent issues of delayed payments, lost claim documents, and administrative inefficiencies. Therefore, the fundamental problem is the absence of effective tracking within the part-time lecturer payment process in Kenyan public universities, leading to significant negative consequences for both lecturers and institutions. Based on the findings from examining these current systems and establishing user and functional needs, the proposed solution involves the development and implementation of a comprehensive **digital** tracking system designed to introduce transparency, automation, and accessibility into the payment workflow.

3. Objectives

This article is structured around two core objectives derived from the broader research on part-time lecturer payment tracking:

i. To examine the current systems utilized for managing and tracking part-time lecturer payments in Kenyan public universities.
ii. To establish the specific **digital** tracking system requirements necessary to address the identified deficiencies in current payment processes and improve efficiency and transparency.

4. Scope and Significance

This article is limited in scope to presenting findings related to the examination of existing part-time lecturer payment tracking systems and the subsequent establishment of requirements for a digital solution in selected Kenyan public universities. It draws specifically from the data collected and analyzed for these two objectives within the study. While the broader research included modeling and testing a system, the focus here is strictly on diagnosing the problem through assessing current practices and prescribing a digital remedy through defining requirements.

The significance of this study is multi-faceted. Through detailing the inefficiencies of current manual and fragmented systems, it highlights a critical administrative gap in Kenyan higher education. Establishing clear, user-informed requirements for a digital tracking system provides a crucial blueprint for developing effective solutions. Implementing such a system promises substantial benefits for part-time lecturers, including improved payment timeliness and

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confidence, potentially alleviating financial strain related to non-payment and reducing risks of debt among the said dons. For universities, it offers a path towards better financial management, reduced instances of double payments, enhanced institutional reputation, and potentially contributes to improving the quality of teaching by maintaining lecturer morale. This work aligns with broader efforts to leverage digital technologies for improved governance and service delivery in educational institutions. Furthermore, producing high-quality academic work that can be publishable in international journals is a hallmark of robust postgraduate research, which is as well facilitated by the lecturers.

5. LITERATURE REVIEW

Universities globally rely significantly on part-time lecturers to complement their full-time academic staff, assisting with teaching, learning, research, and student examination processes.[5]

Engaging part-time lecturers can offer cost advantages as they may not receive the same fringe benefits and perquisites as full-time employees. However, the management of part-time lecturer payments has emerged as a critical and often problematic issue in many universities, particularly in regions like Kenya.[6] Issues such as non-payment, delayed payment, partial payments, misplaced claim documents, and lack of proper documentation are widely reported challenges.[7] These problems significantly impact the motivation of part-time lecturers, potentially leading to a decline in the quality of education provided to students. Furthermore, universities themselves face challenges including damaged institutional reputation and potential financial losses due to issues like double payments resulting from poor documentation and management processes. Addressing these widespread problems necessitates effective payment management, ideally supported by robust tracking systems.

Current Systems for Managing Part-Time Lecturer Payments

Existing literature highlights that the methods and systems used by universities to manage part-time lecturer payments vary, but often suffer from significant limitations.[8] Studies reveal that a considerable number of institutions still rely on manual processes, including paper-based systems and the use of Excel spreadsheets for recording lecturer details, course allocations, and dues. While some universities have adopted more automated approaches such as in-house developed applications, stand-alone computer systems, or integrated modules within larger Enterprise Resource Planning (ERP) systems, these systems are often primarily focused on tasks like allocating courses, generating appointment letters, or entering student examination marks.[9]

A critical flaw identified in many of these current approaches is the **absence of an integrated tracking element** for payments. Manual systems are characterized by being cumbersome, prone to loss of claim documents, and being bureaucratic. Stand-alone or older computerized systems may lack remote access, meaning part-time lecturers have to travel long distances to physical offices to inquire about the status of their payments. This physical follow-up process is time-consuming and often yields uncertain results regarding the location or processing stage of a claim document, at times compounded by absence of the concerned officers at the time of visit. Furthermore, manual processes make it difficult to accurately budget, maintain proper documentation, and contribute significantly to payment delays. The lack of unique identifiers for claims in some systems exacerbates the difficulty in tracking.

In contrast, some international examples suggest better-managed systems, such as unionized part-time lecturers in Europe, Asia, and America with well-defined payment processes.[10] However, challenges like delayed processing still exist in some regions, sometimes complicated by centralized e-finance systems. The current landscape in many universities, particularly those struggling with understaffing and high demand for part-time lecturers, highlights a significant gap in the systematic and transparent tracking of payment processes from claim initiation to final disbursement.

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Requirements for a Part-Time Lecturer Payment Tracking System

The digital perspective

The inadequacies of existing systems underscore the need for a dedicated and comprehensive payment tracking system for part-time lecturers. Based on identified challenges and user needs, a suitable tracking system should incorporate specific user, functional, and non-functional requirements.[11]

Key **user requirements** emphasize accessibility and usability. The system should be accessible 24/7 through a web-based platform that is compatible with various devices, including mobile phones. A user-friendly interface with a secure login (user profile) is essential, allowing users to track activities, time, and location related to their claim documents. Users should be able to easily view their payment information and track the status of their claims remotely, eliminating the need for physical visits, (***researchers' emphasis***).

Functional requirements define the core capabilities of the system.[12] These include robust record-keeping for lecturer information, claims, and payment details, as well as functionalities for payment processing, reconciliation, and comprehensive reporting for administrative and finance staff. A crucial functional requirement is the ability to **track the claims posted by each part-time lecturer** from submission to payment. The system should facilitate payment approval workflows, allowing administrators to receive, review, and approve payment requests efficiently. Automated claim processing, including accurate calculation of payments based on contract rates and the ability to handle multiple payment variations, is vital for efficiency and accuracy. Notifications to part-time lecturers regarding their claim status are highly desired. Furthermore, the system should enable document tracking to prevent loss, integrate with existing university systems such as HR and accounting software for seamless operations, and provide a mechanism for lecturers to raise payment-related concerns.

Non-functional requirements address the quality attributes necessary for the system's success.[13] These include performance, reliability, security, compliance, scalability, interoperability, and accessibility. Reliability, defined as the consistency of the system's output or measurement when replicated under the same conditions, is paramount to ensure dependable tracking information.[14] Similarly, validity, which pertains to the system accurately measuring and tracking what it intends to, is crucial for the credibility of the information provided. Implementing appropriate security measures is critical to protect sensitive personal and payment data.[15] The feasibility of developing such a system must also be assessed across economic, operational, and technical dimensions. Ethical considerations, including data privacy and secure storage and usage of information, must be addressed throughout the system's design and implementation, aligning with broader academic integrity and research ethics standards.[16]

This review of the literature highlights a significant need for improved systems in managing part-time lecturer payments within universities. The widespread challenges associated with current manual and fragmented automated approaches, particularly the lack of transparent and remote tracking capabilities, negatively impact stakeholders. Developing a tracking system that incorporates the identified user, functional, and non-functional requirements, while adhering to principles of reliability, validity, and ethical data handling, would represent a valuable contribution to improving administrative efficiency, fostering trust, and ensuring timely and accurate payments for part-time lecturers. This study aims to address this identified gap by modeling such a system.

6. Theoretical Framework and Analysis

Design Science Research (DSR)

This research was underpinned by the Design Science Research (DSR) Framework, a highly suitable theoretical lens given its focus on identifying and addressing real-world problems through the creation of innovative artifacts or

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solutions.[17] DSR is particularly pertinent to this study, which seeks to diagnose deficiencies in existing manual and spreadsheet-based payment tracking systems in Kenyan public universities and subsequently define the requirements for a digital tracking system to mitigate these issues.

The DSR framework provides a robust and structured methodology for bridging the gap between theoretical knowledge and practical application. It aligns perfectly with the core objectives of this study:
Objective (i): To examine the current systems utilized for managing and tracking part-time lecturer payments in Kenyan public universities. This objective directly feeds into the Problem Identification phase of DSR. Being that the current systems are "predominantly manual or spreadsheet-based, lack unique identifiers for claims, and critically, employ no effective tracking technology," leading to "document loss, inability to track claims, and significant delays." This detailed understanding of the problem space, including its impact on lecturers (financial strain, debt, insolvency) and universities (reputation damage, demotivated staff, financial losses), is fundamental to DSR's initial stages.

In the same breath, objective (ii) seeking to 'establish the specific digital tracking system requirements necessary to address the identified deficiencies in current payment processes and improve efficiency and transparency" directly corresponds to the Solution Design phase of DSR. Through identifying comprehensive requirements such as "web-based and mobile accessibility, automated claim processing and payment calculation, real-time claim status tracking and notifications, integration with existing university systems, enhanced security, and overall usability," the research is actively defining the characteristics of the "artifact" (the digital tracking system) intended to resolve the identified problem. The theoretical advantage of digital solutions—offering increased efficiency, transparency, data centralization, and accessibility—directly informs these design requirements, countering the observed weaknesses of current analog processes.

The DSR framework's emphasis on iterative problem-solving and the creation of practical artifacts ensures that the research outcomes are not merely descriptive but are directly applicable to addressing the pressing issue of part-time lecturer payment inefficiencies. While this article focuses on the problem identification and solution design phases, a full DSR cycle would typically involve further development and rigorous validation of the proposed system to confirm its efficacy in improving payment efficiency, reducing errors, and enhancing transparency and accountability, thereby mitigating financial precariousness for lecturers and improving administrative functions for universities as earlier highlighted in the abstract.

7. METHODOLOGY

The findings presented in this article are based on a descriptive research design employed in the original study to examine current practices and establish requirements. The target population included part-time lecturers and administrative staff involved in the payment process (system administrators, audit, finance, and part-time officers) in selected public universities in Kenya. A purposive sampling technique was used to select the universities and the staff categories within them. Data was collected using self-administered semi-structured questionnaires containing both closed-ended and open-ended questions. The open-ended questions were particularly useful in gathering detailed observations and opinions regarding the effectiveness and challenges of the current systems. Data analysis for the descriptive findings involved presenting summarized data using graphs and frequency tables. Quantitative measures like means and standard deviations were utilized. Thematic analysis was applied to the responses from the open-ended questions to identify key issues and requirements. Ethical considerations related to respecting individuals and groups were noted and adhered to.

8. FINDINGS

Based on the examination of current systems and the establishment of tracking system requirements, the following key findings emerged:

8.1. Current Tracking Systems for Part-Time Lecturer Payment a response to (Objective 1)

A significant majority (57.14%) of institutions still rely on manual systems for managing part-time lecturers and tracking payments. Among specific systems used, paper-based methods and spreadsheets are most prevalent (33% each). Existing systems widely lack a standardized unique identifier for payment claims, with 26% of respondents stating none exists and 43% citing varied informal methods like file numbers or appointment letters. No use of QR codes for claim identification was found. A vast majority (93%) reported that no specific **tracking technology** is employed in the current systems to monitor the location or status of payment claims. Follow-up relies on physically moving from office to office.

[17] De Sordi, José Osvaldo. *Design science research methodology: theory development from artifacts*. Springer Nature, 2021.

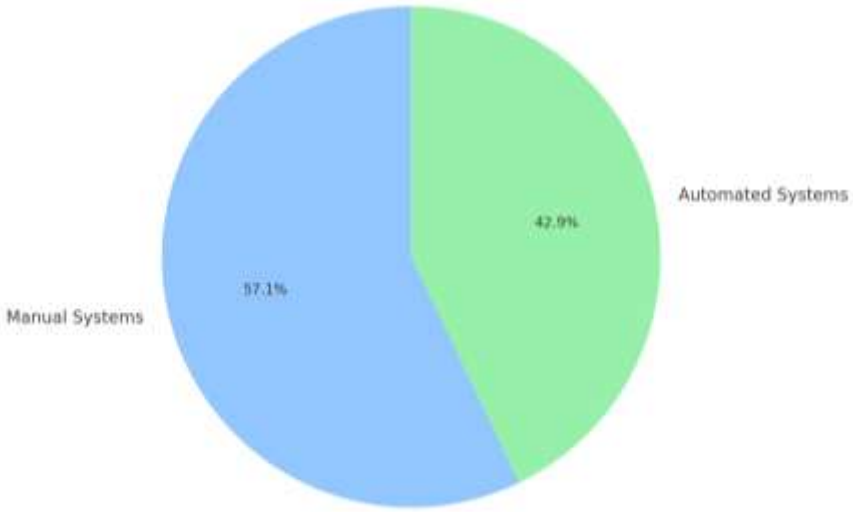

Figure 1 System Type Distribution

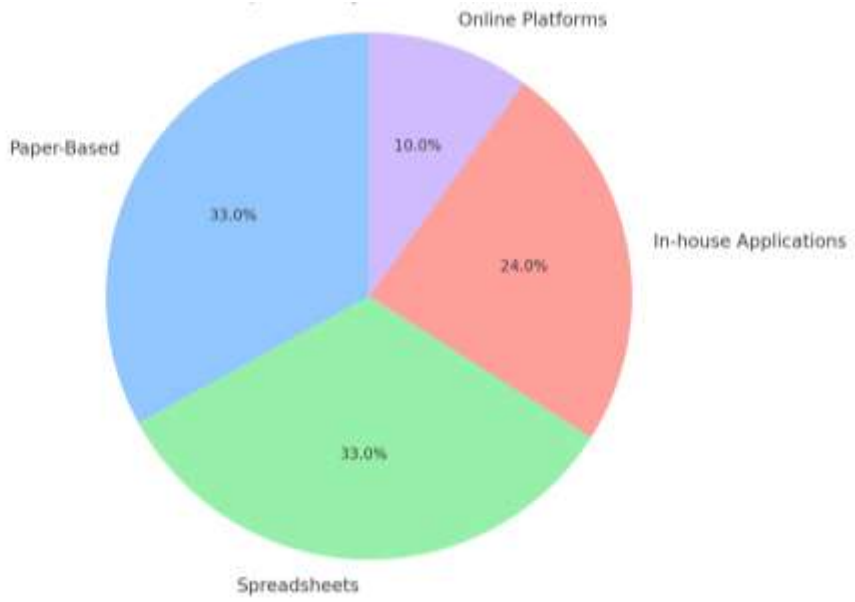

Figure 2 Specific Systems Used

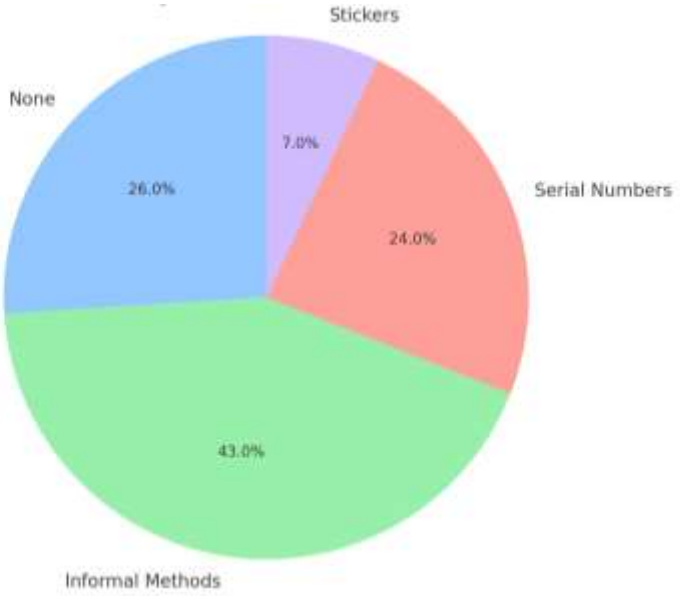

Figure 3 Unique Identifier Methods

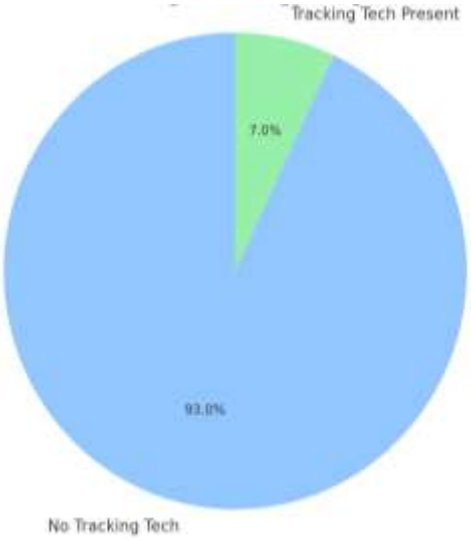

Figure 4 Tracking Technology Usage

Consequently, the duration required to track a claim document is unknown for 67% of respondents. Payment claim documents are primarily submitted manually (83.3%) to academic departments. Key administrative challenges faced with current systems include loss of claim documents (reported by 61.9% of respondents), double payments (59.52%), poor budgeting (40.47%), delayed payments (30.95%), and the fundamental inability to track claims. Most institutions (83.3%) lack an online portal or system where part-time lecturers can view payment information or track claim status.

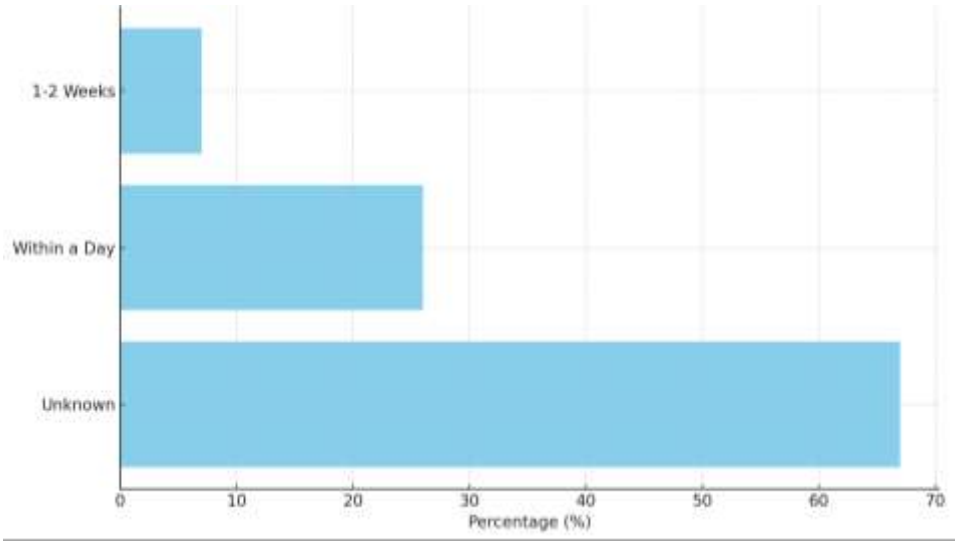

Figure 5 Claim Tracking Duration

Figure 6 Claim Submission Methods

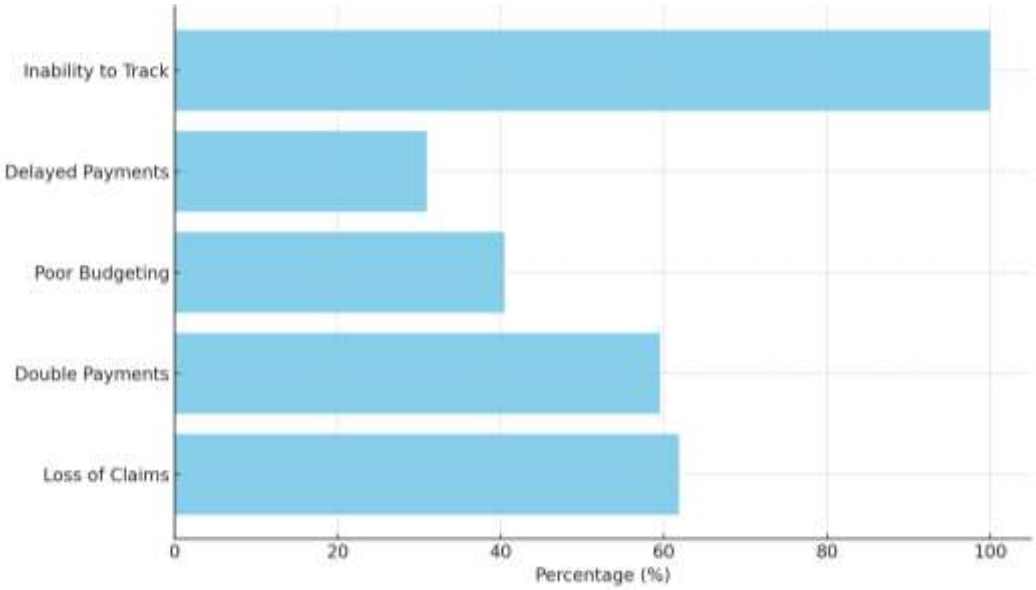

Figure 7 Administrative Challenges Reported

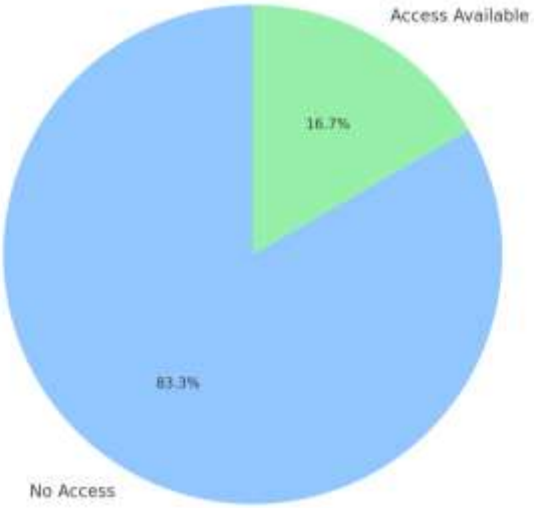

Figure 8 Access to Online Payment Portals

8.2. Tracking System Requirements for Part-Time Lecturer Payment (Objective 2)

The findings concerning the requirements for a digital tracking system for part-time lecturer payments underscore a clear preference for enhanced accessibility and automation among both part-time lecturers and administrative staff. A significant majority of respondents (35 in every 40) expressed a strong preference for a web-based portal, complemented by mobile accessibility, indicating the need for a versatile and ubiquitous platform.

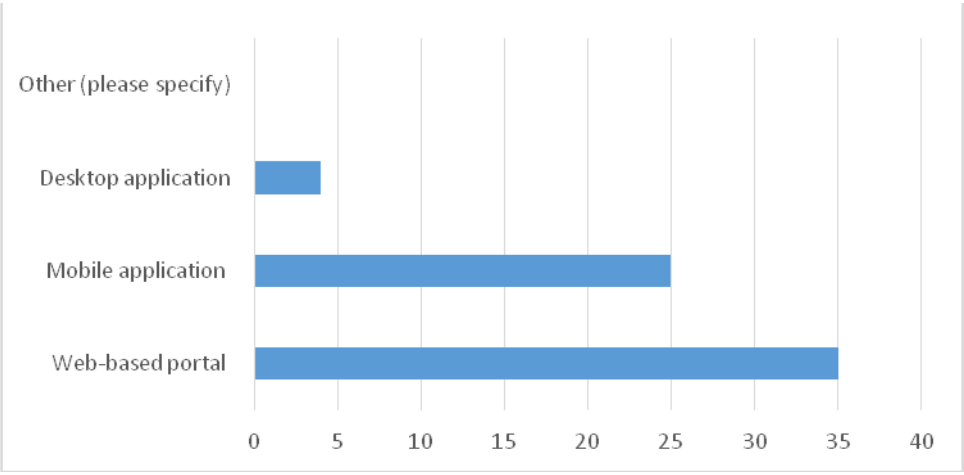

Figure 9 Respondent Preference for Web-Based and Mobile-Accessible Portal

Analysis of desired functionalities revealed a strong consensus regarding features designed to improve efficiency and transparency. Notifications pertaining to claim status were deemed crucial by 80.95% of respondents, highlighting the demand for real-time updates and reduced uncertainty. Furthermore, automated claim processing was overwhelmingly supported by 92.85% of respondents, signaling a critical need to streamline and accelerate the current manual workflows. The inclusion of administrator review and approval workflows was also identified as an important feature by 76.19% of respondents, ensuring oversight and control within the automated process.

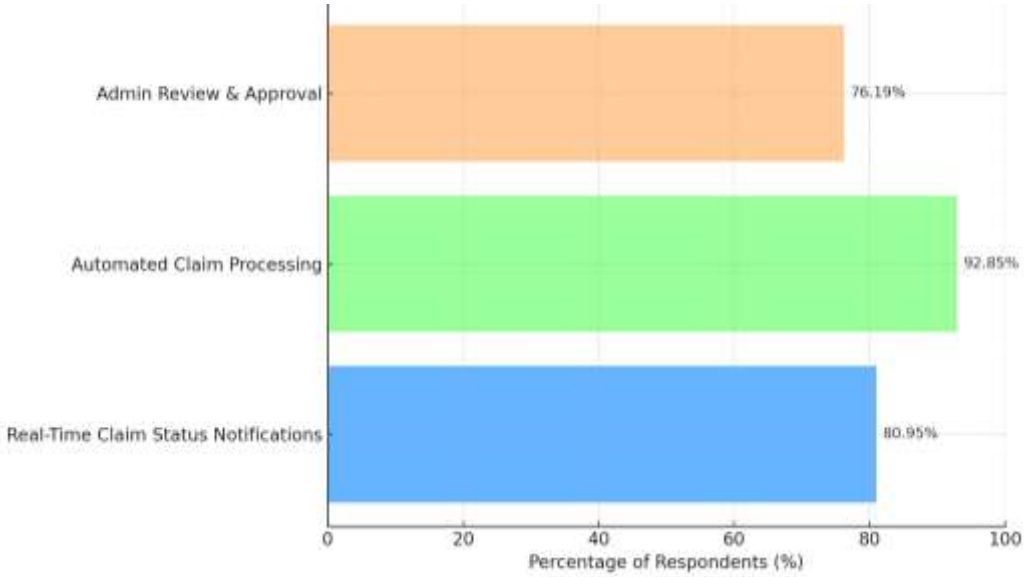

Figure 10 Desired Functionalities for Enhanced Efficiency and Transparency

Beyond process automation, all respondents emphasized the foundational requirement for the system to accurately track claims submitted by each individual part-time lecturer. A substantial 83.33% of respondents also indicated a necessity for the automated calculation of payments, derived directly from contracted rates, thereby minimizing manual errors and disputes. Specific notification types identified as essential for effective communication included confirmation of claim submission, updates on claim status throughout the approval process, confirmation of payment disbursement, and clear articulation of reasons for any claim rejection. These notifications are critical for fostering transparency and reducing the communication burden on administrative staff.

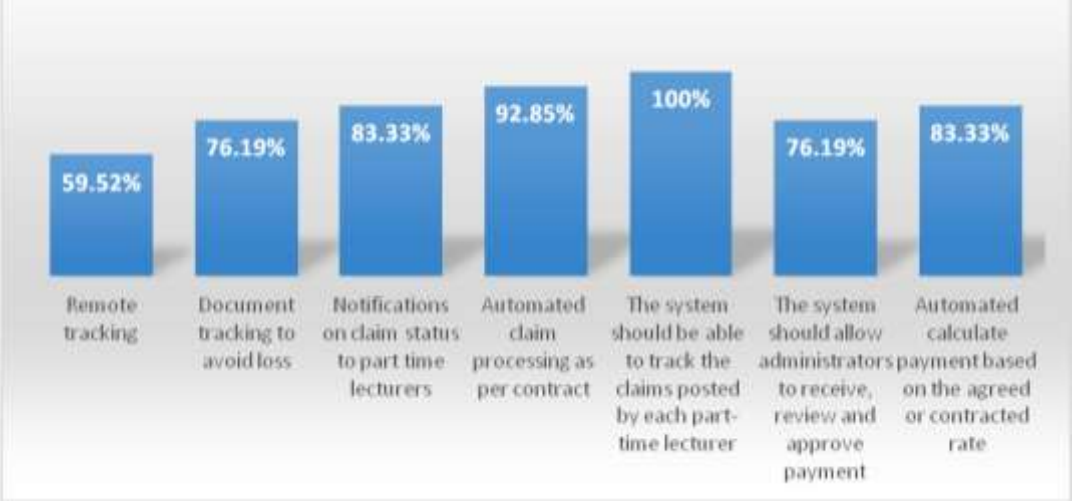

Figure 11 Foundational requirement for the system

Synthesizing these findings, the essential functionalities for the proposed digital tracking system encompass user profile management, comprehensive claim tracking capabilities, streamlined payment approval and processing mechanisms, and robust reporting tools. Furthermore, the system must ensure 24/7 accessibility and seamless integration with existing university Human Resources (HR) and accounting software to avoid data silos and enhance overall institutional efficiency. Paramount to the system's success are robust security measures to safeguard sensitive financial and personal data, alongside the implementation of a highly user-friendly interface.

Finally, the capacity to accurately handle multiple payment rates and generate detailed payment reports was also identified as an important aspect for effective financial management. These comprehensive requirements collectively

articulate the functional specifications for a digital solution designed to overcome the current systemic deficiencies in part-time lecturer payment management.

9. DISCUSSION OF FINDINGS

The findings from Objective 1 vividly illustrate that despite the increasing adoption of IT in Kenyan universities, the critical administrative function of part-time lecturer payment tracking remains largely rooted in inefficient, manual, and fragmented processes. The high prevalence of paper-based records and spreadsheets, coupled with a near-total absence of dedicated tracking technology, directly explains the widespread challenges reported by both lecturers and administrators. The lack of unique identifiers and inability to track claim status contributes to lost documents and makes navigating the payment workflow opaque and frustrating, necessitating time-consuming physical follow-ups. This inefficiency is a primary contributor to payment delays and the risk of errors like double payments, validating concerns raised in the problem statement and prior research. Compared to the use of tracking technologies in other service-oriented sectors, the current state in this specific university administrative function appears significantly underdeveloped.

The requirements established in Objective 2 provide a clear mandate for a **digital** transformation of this process. The strong preference for web and mobile accessibility reflects the need for a system that aligns with modern technology use and overcomes the limitations of physical location-based tracking. Requirements such as automated processing, payment calculation, and notifications directly address the burdens of manual tasks and lack of transparency identified in the current systems. The demand for real-time claim tracking and status updates is a direct response to the current inability to know where claims are in the process. Furthermore, the emphasis on integration with existing ERP and accounting systems is crucial for ensuring seamless data flow and avoiding manual data entry errors that contribute to current problems. These requirements collectively outline the features of a robust digital tracking system capable of providing the needed efficiency, transparency, and reliability, contrasting sharply with the weaknesses of the current systems.

10. SUMMARY, CONCLUSION, AND RECOMMENDATIONS

10.1. Summary

This article presented findings from a study examining the current systems used for tracking part-time lecturer payments and establishing the requirements for a digital tracking system in Kenyan public universities. The examination revealed that existing systems are largely manual, fragmented, and lack basic tracking technology, leading to significant inefficiencies, errors, and frustrations for both lecturers and university administration. Based on user needs, comprehensive requirements for a digital tracking system were identified, emphasizing accessibility, automation, real-time tracking, integration, and security.

10.2. Conclusion

Based on the findings focusing on the examination of current systems and the establishment of requirements, it is concluded that the existing methods for managing part-time lecturer payments in Kenyan public universities are fundamentally inadequate and contribute significantly to widespread payment problems. There is a clear and urgent need for a dedicated **digital** tracking system. The requirements established highlight the critical features necessary for such a system to be effective, focusing on automation, transparency, accessibility, and seamless integration with existing university infrastructure. Implementing a system that meets these requirements would offer a viable solution to streamline administrative tasks, reduce payment processing delays, enhance financial accountability, and improve satisfaction among part-time lecturers, thereby contributing to overall organizational effectiveness and potentially reducing instances of financial hardship and **debt** related to delayed or non-payment.

10.3. Recommendations

Based on the conclusions drawn from the examination of current systems and established requirements:

1. Universities should prioritize the development and adoption of a dedicated **digital** tracking system for part-time lecturer payments, ensuring it incorporates the identified user, functional, and non-functional requirements.
2. Efforts should be made to integrate this system seamlessly with existing university ERP and accounting software to ensure end-to-end automation and data accuracy.
3. Awareness campaigns should be implemented to educate both part-time lecturers and administrative staff on the benefits and proper utilization of the new **digital** tracking system to maximize its adoption and effectiveness.
4. Further research should explore the potential integration of emerging **digital** technologies, including elements of **AI** for workload forecasting and budgeting, or secure ledger technologies, to further enhance system capabilities, transparency, and predictive financial management.

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