Teachers' Knowledge and Utilization of Autocrat in School Results Management: A Case Study of Selected Secondary Schools in Itezhi-Tezhi District, Zambia

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ABSTRACT

This study explored teachers' knowledge of and utilization patterns with Autocrat software in school results management in selected secondary schools in Itezhi-Tezhi District, Zambia. The study focused exclusively on 40 secondary school teachers who were directly responsible for results processing and management. Data were collected through in-depth semi-structured interviews and analyzed using thematic analysis procedures. The analysis revealed two primary findings corresponding to the research objectives. First, regarding teachers' knowledge level on Autocrat software, the study found that teacher knowledge was substantially fragmented and operationally limited, with understanding largely restricted to basic data entry and report generation procedures. Teachers demonstrated limited knowledge of advanced system functionalities, analytical capabilities, and data validation procedures, acquiring knowledge primarily through informal mechanisms and brief training events rather than sustained professional development.

Second, regarding utilization of Autocrat in school results management, the study established that despite software availability, utilization remained compliance-focused and functionally limited, with teachers employing the system exclusively for periodic mark entry and Ministry-required reporting rather than for evidence-based decision-making, student performance monitoring, or educational quality improvement. Teachers reported significant barriers including inadequate initial training, absence of ongoing technical support, unreliable infrastructure, and severe time constraints competing with other teaching responsibilities. Multiple interconnected barriers operated at individual, school, and system levels to constrain effective and meaningful utilization. The research underscores that technology adoption in educational settings requires comprehensive systemic intervention extending far beyond software provision and isolated training events. Two critical recommendations emerged: (1) establish sustainable, differentiated professional development programs combining intensive initial training with ongoing technical support, peer mentoring communities, and explicit integration of Autocrat data analysis into regular school management processes, curriculum planning cycles, and teacher performance review mechanisms; and (2) implement explicit organizational protocols and administrative structures that position results management as a central function supporting continuous quality improvement, including regular data review meetings, professional development in analytical interpretation of system-generated reports, and deliberate linkage between Autocrat-generated insights and instructional decision making practices. These recommendations recognize that effective technology adoption requires sustained institutional commitment to both human capacity development and organizational integration of technology-enabled processes.

Keywords: Autocrat, teacher knowledge, results processing, technology adoption, utilization barriers.

INTRODUCTION

The management and systematic processing of student academic results represents a critical administrative function in secondary education systems globally, with particular importance in African contexts where educational quality improvements are paramount (Darling-Hammond, 2000). Traditionally, results processing in

many African schools has relied on manual procedures involving handwritten records, basic spreadsheets, or rudimentary database systems that are time-consuming, prone to errors, and offer limited analytical capacity (Kataev and Mkrttchian, 2017). However, increasing recognition of the importance of timely, accurate, and accessible student feedback to support educational quality has prompted educational authorities across sub-Saharan Africa to invest in specialized software solutions designed to automate and enhance results processing workflows (Lyanda, Koteng, and Ongunya, 2023). Autocrat software represents one such technological solution specifically engineered for educational institutions operating in African contexts. The software integrates several key functionalities including automated student data management, streamlined mark entry and verification procedures, rapid result compilation and aggregation, statistical analysis of examination outcomes, and generation of standardized and customized reports (Arciso and Casquejo, 2025). The software was designed to reduce manual data entry errors, facilitate efficient result compilation and analysis, and improve communication channels between schools and parents (Kataev and Mkrttchian, 2017). Consequently, educational management systems are increasingly evaluated not only in terms of technical functionality but also in their capacity to enhance administrative efficiency and support evidence-based decision-making.

In developing countries, the adoption of educational management technologies has accelerated in response to global education agendas, particularly the push toward inclusive and equitable quality education supported by digital infrastructure (Namushi, Kabundula and Mwanza-Kabaghe, 2023; Kabundula and Namushi, 2023; Shambare, Simuja, and Olayinka, 2022). Zambia has made notable strides in formalizing secondary education administration through technology adoption initiatives aimed at promoting systematic data management, accountability, and transparency (Kalimaposo, et al., 2023). The Zambian Ministry of Education has articulated policy frameworks intended to support improved results processing and educational monitoring across secondary schools (Chibalange and Annie, 2024). However, the extent to which these policy intentions are effectively realized through technological implementation and institutional capacity remains underexplored. Emerging evidence from developing countries suggests that educational software adoption frequently encounters barriers related to infrastructure limitations, teacher competence, and institutional readiness, while the actual impact on educational quality outcomes remains variable (Kennedy, Mellon and Matthew, 2024). This raises critical concerns regarding whether current technological implementations adequately support the efficiency gains and pedagogical improvements necessary for enhancing overall educational quality and student outcomes. Despite growing international investment in educational management systems, empirical research examining the effectiveness of Autocrat and similar solutions within Zambian secondary school contexts remains scarce (Nkambule and Ngubane, 2024).

Itezhi-tezhi District, as a rural District with Secondary schools provides a strategic context for assessing how Autocrat results management is operationalized. An exploration of Autocrat knowledge and utilization within this context offers valuable insights into its alignment with contemporary educational technology standards and its responsiveness to the administrative demands of secondary schools. Therefore, this explored the teacher's knowledge levels and utilization of Autocrat software in managing student academic results across secondary schools in Itezhi-tezhi District, Zambia.

LITERATURE REVIEW

Teacher knowledge and competency in information and communication technology represents a critical factor influencing both technology adoption decisions and implementation effectiveness (Abedi, 2023). The concept of teacher knowledge encompasses several interrelated dimensions: theoretical understanding of technology systems and their capabilities, practical operational competencies required to execute specific software procedures, pedagogical knowledge regarding integration of technology into educational practice, and attitudinal and psychological dimensions including beliefs, confidence, and self-efficacy regarding technology use (Ajani, 2024). Research demonstrates that comprehensive competency across these dimensions is necessary for sustained technology utilization and effective integration into professional practice (McGarr and McDonagh, 2020). Barriers to educational technology adoption have been extensively documented in research literature, with emerging research indicating that teachers frequently encounter significant challenges in translating policy intentions into classroom practice (Shambare, Simuja, and Olayinka, 2022). Multiple studies have identified

significant categories of barriers including inadequate teacher training, insufficient institutional support systems, unreliable infrastructure, and misalignment between technology design and practitioner needs (Adelabu, Grace Fumba, and Nomhlangano, 2025). These barriers appear consistently across diverse educational contexts and technology types, suggesting they represent fundamental systemic challenges rather than isolated, context-specific problems (Kalimaposo et al., 2023). The persistence of these barriers across contexts indicates that technology adoption requires attention to multiple system levels rather than focusing exclusively on individual teacher training.

Technology adoption in educational administration contexts requires more than software provision and brief training. Research examining school-based technology interventions has found that sustainable change requires comprehensive integration into organizational practices, sustained administrative support, and explicit alignment with institutional goals and priorities (Lyanda, Koteng, and Ongunya, 2023). This finding suggests that technology adoption should be understood not as an isolated technical matter but rather as an organizational change process requiring systemic support across multiple levels (Nkambule and Ngubane, 2024). Similarly, research on professional development effectiveness demonstrates that brief, one-time training interventions produce limited lasting changes in practice, while sustained, ongoing support structures produce more durable improvements in technology adoption and integration (Marmoah et al., 2023). Teacher attitudes, self-efficacy beliefs, and psychological responses to technology substantially influence adoption decisions and utilization patterns, with studies indicating considerable variation in teacher readiness and receptiveness (Purwadi, Chadijah, and Suhana, 2024). Research indicates that teachers experiencing technology anxiety, low confidence in technical capabilities, or negative beliefs about technology effectiveness are substantially less likely to adopt new technologies, regardless of their formal training or technical qualifications (Shernoff, Sinha, Bressler, and Ginsburg, 2017). These psychological and affective factors appear to mediate the relationship between knowledge and behavior, suggesting that training interventions addressing only technical knowledge may be insufficient for promoting sustained utilization (Mhanga and Moloi, 2020). The complexity of technology adoption in resource-constrained contexts introduces additional considerations that are particularly relevant to sub-Saharan African educational systems. Infrastructure limitations including unreliable electricity supply, limited internet connectivity, and inadequate hardware resources are often more severe in African educational contexts compared to well-resourced settings (Gumede and Ngobe, 2025). These contextual factors interact with more universal barriers to create particular challenges for technology adoption in developing educational systems, with research indicating that infrastructure deficits represent a persistent and fundamental impediment to technology integration (Ndlovu, 2025). Understanding teacher experiences with technology adoption in such contexts provides essential insights for designing contextually appropriate intervention strategies that account for the specific challenges faced by educators in resource-constrained environments (Kalimaposo et al., 2023). Consequently, technology adoption initiatives in African educational systems must consider not only individual teacher competencies but also organizational readiness, infrastructural capacity, and policy alignment to achieve sustainable and meaningful improvements in educational quality.

Theoretical Framework

This study was anchored in the Technology Acceptance Model (TAM) by Davis (1989). The theory posits that technology acceptance is primarily determined by two key constructs: perceived usefulness which is the extent to which a user believes that using a system enhances their performance and perceived ease of use, which refers to the degree to which a user believes that using the system is free of effort. These two constructs influence users' attitudes toward technology, which in turn shape their behavioral intentions and actual system usage. In the context of this study, the theory was particularly relevant as it provided a framework for examining external variables such as training, technical support, infrastructure and organizational readiness in shaping teachers' perceptions of usefulness of Autocrat and ease of use. The relevance of the theory to the current study extended to its focus on predicting and explaining technology adoption within a school environment which further guided the exploration of how Autocrat is accepted, integrated and utilized for results management and dissemination.

METHODOLOGY

Research Objectives

The specific research objectives were to:

- Explore teachers' knowledge level on Autocrat software in selected secondary schools in Itezhi-tezhi District.
- Establish Autocrat utilization in school results management in selected secondary schools in Itezhi-tezhi District.

Research Design

This study employed a case study design investigating the phenomenon of Autocrat technology adoption within the context of secondary schools in Itezhi-Tezhi District, Zambia. The qualitative approach was selected because it enabled an in-depth exploration of participants' lived experiences, interpretations, and understandings of technology adoption processes.

Participants and Sample size

The study included 40 secondary school teachers (17 females, 23 males) directly responsible for results processing and management in their schools. Teacher participants represented varying levels of professional experience (1-3 years: n=12; 4-10 years: n=16; >10 years: n=12) and diverse subject specializations including Mathematics (n=8), English (n=7), Sciences (n=10), Social Sciences (n=8), and Technical subjects (n=7).

Sampling

The study employed purposive sampling to deliberately include teachers with direct, hands-on experience implementing Autocrat in their instructional and administrative workflows. Purposive sampling approach was suitable because the study sought in-depth, practice based insights rather than general perceptions. Intentionally selecting teachers who were actively using Autocrat for tasks such as automated grading, document generation and feedback distribution, ensured that the data collected was rich, relevant and grounded in authentic application. Purposive sampling therefore strengthened the credibility and relevance of the findings by prioritizing experiential knowledge.

Data Collection Methods

In-depth semi-structured interviews were conducted with all 40 teacher participants to obtain detailed, experience-based insights into their use of Autocrat. This method allowed for consistency through guided questions while providing flexibility for participants to elaborate on their unique experiences. It ensured rich, relevant data and strengthened the credibility of the study.

Research Instruments

Semi-structured interview was developed specifically for teachers, incorporating open-ended questions aligned with research objectives. This provided sufficient structure to ensure consistency across interviews while maintaining flexibility to explore emerging themes and pursue areas of particular relevance to individual participants

Data Quality Assurance

The state of acceptability of the study results in terms of ensuring that it was a true and unique academic product was guided by Guba and Lincoln’s (1994) four criteria of trustworthiness, which are widely regarded as appropriate for qualitative research. These criteria include credibility, transferability, dependability and confirmability. Credibility was ensured by carefully planning and systematically implementing the study from beginning to end. Which strengthened the coherence of the research process. In addition, appropriate data collection procedures and consistent engagement with participants helped to enhance the accuracy and

authenticity of the findings. Transferability was achieved by providing detailed descriptions of the research context, participants and procedures, thereby enabling other researchers to determine the applicability of the findings to similar settings. The study was also contextualized within existing literature, comparing and contrasting findings with related studies while contributing new insights to the existing body of knowledge. Dependability was enhanced by ensuring the reliability of the research instruments through pre-testing (pilot testing) prior to the main data collection. This process helped to refine the tools, improve clarity and ensure consistency in data collection procedures. Confirmability was maintained through bracketing (epoche), whereby the researcher consciously set aside personal biases and assumptions and reported participants' views as expressed. Verbatim reporting of responses was used to ensure that the findings accurately reflected the participants' perspectives rather than the researcher's interpretations.

Data Analysis

Data analysis was conducted using thematic analysis. This involved familiarization with the data, generating initial codes, identifying and reviewing emerging patterns which led to organization of these patterns into coherent themes. The process was iterative and reflexive, allowing themes to be refined and clearly defined to ensure they accurately represented the underlying meanings within the study dataset.

Ethical Considerations

This study received formal approval from the ST Eugene university research ethics committee. Informed consent was obtained from all participants after they received comprehensive information regarding study purpose, procedures, confidentiality protections, and voluntary participation. Participant anonymity was maintained through assignment of pseudonyms in all reports. Data were securely stored with access restricted to research personnel. Participants were assured of confidentiality and informed of their right to withdraw from the study without penalty.

RESULTS AND DISCUSSION

Teachers' knowledge level on Autocrat software

Analysis of teacher interview data revealed that Autocrat knowledge was substantially fragmented and operationally limited. Teachers' understanding was restricted to basic procedures rather than comprehensive system knowledge. One teacher explained, "I can enter the marks into the system and then print the reports, but I don't really understand how the system works behind the scenes or what other things it can do" (Teacher 12). Similarly, another teacher stated that, "I know how to log in and where to find the student data. After that, I'm honestly not sure what all the system can do. I have never really explored beyond the basics" (Teacher 28). A third teacher articulated, "We were shown how to enter marks and generate the standard reports during the training. But the system has many features I don't understand. I wouldn't know how to create custom reports or use the analysis tools even if I needed to" (Teacher 40). When asked to describe Autocrat's features in detail, teachers consistently paused, expressed uncertainty, and acknowledged significant knowledge gaps, indicating that operational knowledge remained confined to fundamental data entry and basic report retrieval functions. The finding on fragmented knowledge pattern aligns with findings reported on teacher competency dimensions in technology adoption by Ajani (2024) who identified that teacher competence requires integration across theoretical understanding, practical operational procedures, pedagogical knowledge, and psychological dimensions including confidence and self-efficacy. Teachers in this study demonstrated competency only in basic operational procedures while exhibiting substantial gaps in theoretical system understanding and awareness of advanced functionalities. This pattern reflects broader research indicating that brief, one-time training interventions produce limited knowledge retention, particularly regarding advanced features. The consistency of knowledge limitations across teachers with varying experience (8-15 years) which suggests systemic inadequacies in training design rather than individual variation. Furthermore, the hesitation and uncertainty expressed by teachers when discussing the capabilities of the system reflect underlying anxiety about their technological competence, which constitutes a significant barrier to meaningful technology adoption. This finding aligns with the Technology Acceptance Model by Davis (1989), which posits that technology acceptance

is primarily influenced by two key constructs which is perceived usefulness and perceived ease of use. The findings suggest that teachers in Itezhi-Tezhi District perceive the Autocrat digital tool as difficult to use, thereby negatively affecting their willingness to adopt and effectively utilize the technology in their professional practice.

The implications of the above findings for Autocrat knowledge level are substantial in the 21st century education system. Teachers' restricted knowledge level on the use of Autocrat tool to basic data entry and simple report printing significantly underutilize software functionalities designed for data validation, statistical analysis and customized reporting features intended to enhance administrative decision making and educational quality monitoring (Lyanda, Koteng, and Ongunya, 2023). This underutilization suggests that the Autocrat investment may not yield anticipated returns in administrative efficiency gains or data-driven decision making capacity. Moreover, limited knowledge prevents teachers from identifying system errors, validating data quality, or recognizing process improvement opportunities critical capabilities for sustained technology utilization. Nkambule and Ngubane (2024) document that inadequate system understanding frequently contributes to persistent implementation barriers and suboptimal educational management system outcomes. The findings suggest that Autocrat implementation is operating substantially below intended specifications, with implications for school capacity to generate reliable educational data necessary for evidence-based decision-making. The findings underscore critical implications for professional development policy and practice. Current evidence indicates that training prior to Autocrat implementation failed to develop comprehensive system knowledge or build teacher confidence and self-efficacy dimensions essential for sustained adoption and effective utilization.

Utilization of Autocrat in School Results Management

Findings from teacher interviews revealed that Autocrat utilization in school results management was markedly restricted to basic administrative compliance functions rather than meaningful integration into comprehensive educational quality monitoring or data-driven decision making processes. Teachers consistently described their use patterns as limited to periodic mark entry and generation of standard reports required by the Ministry of Education, typically conducted toward the end of each term for compliance purposes. One teacher explained, "I enter the marks when I finish marking the papers, then I generate the report when the headmaster asks for it. That's basically the extent of what I use it for, it's more of a requirement than a tool that helps me" (Teacher 5). Another teacher stated, "The system is useful for keeping marks organized and producing the reports we need to submit, but I don't really use it to analyze student performance or identify where students are struggling" (Teacher 19). A third teacher articulated the compliance-focused orientation: "Every term we must enter the marks and print the reports for the Ministry. That's what Autocrat does for us. I haven't thought about using it to track individual student progress or identify patterns in performance across classes" (Teacher 34). Observational data from school records confirmed minimal utilization of analytical features, with no evidence of customized reporting, comparative performance analysis, or longitudinal tracking of student achievement trends. This pattern of compliance focused, functionally limited utilization aligns with research findings indicating that when technology implementation occurs without comprehensive understanding of system capabilities or deliberate integration into institutional practices, utilization typically remains restricted to basic operational functions as reported by Marmoah et al., (2023). The implications of restricted Autocrat utilization for school results management and educational quality are significant and multifaceted. The findings imply that despite Autocrat's availability, teachers and administrators were not leveraging the system as a comprehensive management tool designed to support evidence based decision-making, student performance monitoring, or educational quality improvement the stated objectives of the original system implementation initiative. When schools employ pupil results management systems exclusively for compliance and basic mark storage rather than for analytical decision making, they forfeit substantial opportunities to generate actionable insights regarding student learning patterns, identify students requiring intervention, and implement data-informed instructional improvements (Nkambule and Ngubane, 2024). The compliance focused utilization pattern found in this study indicated that schools in Itezhi-tezhi were not capitalizing on Autocrat's potential to support school improvement planning, teacher professional development targeting identified learning gaps or resource allocation decisions informed by performance data. Furthermore, the absence of longitudinal tracking and comparative analysis capabilities in current utilization practices prevents schools from monitoring long term student achievement trends, identifying systemic gaps in curriculum implementation, or evaluating the effectiveness of instructional interventions

(Lyanda, Koteng, and Ongunya, 2023). These underutilized analytical functions are precisely necessary for supporting the school improvement processes and evidence based management practices increasingly emphasized in educational policy frameworks in Zambia and across sub-Saharan Africa. Addressing this utilization gap requires intentional organizational change initiatives that move beyond technical system provision to encompass explicit integration of Autocrat data analysis into regular school management processes, teacher performance review mechanisms, curriculum planning cycles and student intervention practices.

CONCLUSION

The findings from this study revealed a critical disconnect between Autocrat software and its actual utilization in school results management, rooted fundamentally in inadequate teacher knowledge and limited institutional integration. Teachers' fragmented understanding of system capabilities restricted to basic data entry and report generation directly corresponds with compliance focused utilization patterns that fail to leverage the software's analytical potential for evidence-based decision-making, student performance monitoring, or educational quality improvement. This disconnect represents not merely an individual teacher limitation but rather a systemic failure in implementation strategy, wherein technical system provision proceeded without concurrent development of comprehensive teacher competency across theoretical understanding, advanced operational procedures, and psychological dimensions of confidence and self-efficacy essential for meaningful adoption. The underutilization of analytical functionalities designed for data validation, comparative performance analysis and longitudinal tracking prevents schools from generating the actionable insights necessary to identify student learning gaps, implement targeted interventions, and support evidence-based school improvement processes increasingly emphasized in sub-Saharan African educational policy. Moving forward, two critical recommendations emerge from this analysis: First, school administrators and the Ministry of Education should establish sustained, differentiated professional development programs that move beyond isolated training events to provide ongoing technical support, peer mentoring communities, and explicit integration of Autocrat data analysis into regular school management processes, curriculum planning cycles, and teacher performance review mechanisms recognizing that technology competency development represents a continuous institutional commitment rather than a discrete training outcome. Second, educational leaders should implement explicit organizational protocols and administrative structures that position results management as a central function supporting continuous quality improvement, including regular data review meetings, professional development in analytical interpretation of Autocrat-generated reports, and deliberate linkage between system generated insights and instructional decision-making, thereby transforming Autocrat from a compliance instrument into a strategic management tool capable of advancing the evidence-based educational practices necessary for improving student learning outcomes and institutional effectiveness in Zambian schools.

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