Lecturers' perceptions of the benefits and risks of generative Artificial Intelligence [AI] in teaching, learning and assessment: A case of selected universities in Rwanda

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https://doi.org/10.51867/ajernet.7.4.124

ABSTRACT

This study investigated lecturers' perceptions of the benefits and risks of Generative Artificial Intelligence (GenAI) in teaching, learning, and assessment in selected universities in Rwanda. The study was grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al., which identifies performance expectancy, effort expectancy, social influence, and facilitating conditions as the main determinants of technology acceptance and use. UTAUT guided the examination of how lecturers' perceptions of GenAI's usefulness, institutional environment, and potential consequences shape their willingness to integrate it into their practice. The study employed an exploratory qualitative research design. The population comprised university lecturers from five purposively selected universities, including two public and three private institutions. A sample of 40 lecturers, eight from each university, was purposively selected based on their awareness, experience, or exposure to GenAI tools. Data were collected through semi-structured interviews and analysed thematically using Braun and Clarke's six-phase framework. The findings revealed that lecturers perceived GenAI as both beneficial and risky. Benefits included reduced lesson preparation time, generation of instructional materials and assessment items, alternative explanations, enhanced creativity, personalized learning, and improved feedback. However, lecturers identified risks related to academic integrity, student overdependence, reduced independent learning, assessment validity, inaccurate information, fabricated references, privacy, unequal access, and limited institutional preparedness. The study recommended that universities should develop clear and adaptable GenAI policies, provide continuous AI-literacy training for lecturers and students, redesign assessments to emphasize critical thinking, practical application, reflection, and independent work, strengthen verification and contextualization of AI-generated content, and improve digital infrastructure to promote equitable access.

Keywords: Academic integrity; Assessment; Generative AI; Higher education; Lecturers' perceptions; Teaching and learning, UTAUT

I. INTRODUCTION

Generative Artificial Intelligence (GenAI) has rapidly emerged as an important technology in higher education, particularly since the public release of ChatGPT in late 2022. GenAI refers to artificial intelligence systems capable of generating new content, including text, images, computer code, summaries, and other forms of information. Peñalvo and Ingelmo (2023) explain that GenAI encompasses a range of techniques and applications that distinguish it from conventional AI systems because of its capacity to generate novel content. In higher education, GenAI can support lecturers in preparing teaching materials, generating assessment questions, providing feedback, explaining difficult concepts, and designing learning activities. For students, it can provide personalized explanations, support research and writing, facilitate brainstorming, and offer immediate learning assistance. Kloos et al. (2024) similarly highlight the potential of GenAI to support educational activities, while Memon and Kwan (2025) emphasize the importance of collaboration between teachers and GenAI rather than treating AI as a replacement for educators. United Nations Educational, Scientific and Cultural Organization [UNESCO] (2023) therefore advocates a human-centred approach to GenAI that protects human agency, equity, inclusion, privacy, and educational quality.

International evidence indicates that GenAI adoption is occurring rapidly while lecturers and institutions are still developing appropriate responses. A 2024 Oxford University Press survey involving 841 lecturers and 674 undergraduate students found that approximately 80% of lecturers had used some form of AI to support teaching, while 94% of students had used AI to enhance their learning. However, only one-quarter of lecturers reported having a good understanding of AI tools for teaching. The survey also found that 62% of lecturers were anxious about the impact of AI on higher education, while 46% were concerned that students using AI might fail to develop core skills such as

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critical thinking (Oxford University, 2024). These findings demonstrate the coexistence of substantial AI adoption and significant concerns among educators.

Lecturers' perceptions are particularly important because their attitudes, knowledge, and preparedness can influence how GenAI is incorporated into educational practice. Sebihi et al. (2025) found that educators' perceptions of GenAI are shaped by attitudes, barriers, and learning needs, highlighting the importance of professional development and institutional support. Similarly, institutional policies can influence how educators and students use GenAI. An et al. (2025), in their examination of higher education guidelines and policies, identified the importance of institutional frameworks addressing GenAI use across teaching, learning, research, and administration. These findings suggest that effective GenAI integration requires not only access to technology but also clear institutional guidance and adequate preparation of educators.

The situation is particularly relevant to Rwanda, where higher education is expanding alongside national efforts to promote digital transformation and develop a knowledge-based economy. According to the Ministry of Education in 2025 found out that the number of students enrolled in higher education increased from 95,863 in 2021/22 to 119,716 in 2022/23 and 153,318 in 2024/25. This growth increases the need for effective approaches to teaching, learning, and assessment while creating opportunities for universities to explore innovative educational technologies, including the responsible use of GenAI.

Emerging evidence indicates that GenAI is already influencing students in Rwandan higher education. Gatera et al. (2026), using a mixed-methods approach involving university students in Rwanda, found that 80% of respondents were aware of GenAI tools, 65% primarily used ChatGPT, and 51% mainly used GenAI for research. Students also reported that GenAI had helped improve their academic performance, while the study identified concerns regarding its effects on learning, critical thinking, and writing skills. These findings indicate that GenAI is already becoming part of the university learning environment in Rwanda rather than simply representing a future technological possibility. Rwanda's higher education authorities have also begun responding to these developments. The Higher Education Council (HEC) in 2026 has developed guidelines and assessment tools for distance learning in Rwanda's higher learning institutions, with increasing attention to digital technologies and emerging forms of educational practice. Such institutional developments are important because effective AI integration requires clear guidance concerning appropriate use, assessment, academic integrity, and the responsibilities of lecturers and students.

Although Rwanda is developing institutional approaches to AI integration, empirical evidence concerning lecturers' perceptions of GenAI remains limited and relatively recent. Sebihi et al. (2025), for example, surveyed 32 teaching and research staff at the University of Rwanda and found that approximately two-thirds rated their AI competency at beginner level. Participants also identified challenges related to limited training, infrastructure, ethical concerns, and uncertainty regarding institutional guidance. More recently, Niyibizi and Umutoni (2026) explored lecturers' experiences at a private higher education institution in Rwanda through in-depth interviews with four lecturers. They found that lecturers perceived AI as useful for personalized feedback, saving preparation time, and enhancing student engagement, but identified inadequate training, unreliable internet connectivity, and a lack of clear institutional policies as constraints to adoption.

Other recent Rwandan research further demonstrates growing interest in AI while highlighting the need for broader investigation. Niyibizi (2026) examined the relationship between large language models and personalized learning, academic performance, student engagement, and assessment feedback using data from 658 students and 28 lecturers at a private higher education institution. Although this study provides useful evidence of AI use and its educational implications, it remains focused on a particular institutional context. Together with the student-focused findings of Gatera et al. (2026), existing research provides valuable insights but does not sufficiently explain how lecturers across Rwandan universities perceive the benefits and risks of GenAI across teaching, learning, and assessment.

The gap is therefore not a complete absence of research on AI in Rwanda, but rather the limited, institution-specific, and relatively small-scale evidence concerning lecturers' perceptions of GenAI. Existing studies have focused largely on students, individual institutions, or specific aspects of AI adoption, while less attention has been given to lecturers' perceptions across the interconnected domains of teaching, learning, and assessment. International findings also cannot automatically be generalized to Rwanda because higher education contexts differ in institutional policies, technological infrastructure, lecturer preparedness, assessment practices, and access to AI technologies.

Addressing this gap is important because lecturers are central to translating institutional AI policies into classroom and assessment practices. Their perceptions may influence whether GenAI is used to enhance teaching and learning or whether its use creates challenges related to academic integrity, critical thinking, assessment validity, and student dependence. Therefore, this study seeks to investigate lecturers' perceptions of the benefits and risks of GenAI in teaching, learning, and assessment in selected universities in Rwanda. The findings are expected to provide evidence to inform institutional policies, lecturer professional development, assessment practices, and the responsible integration of GenAI in Rwandan higher education.

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1.1 Research Objectives

i. To examine lecturers' perceptions of the benefits of Generative AI in teaching, learning, and assessment in selected universities in Rwanda
ii. To analyse lecturers' perceptions of the risks and challenges of Generative AI in teaching, learning, and assessment in selected universities in Rwanda

II. LITERATURE REVIEW

2.1 Theoretical Review

This study is grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003). UTAUT is considered the most relevant theory for this study because the research seeks to understand lecturers' perceptions of the benefits and risks of Generative Artificial Intelligence (GenAI) and their willingness to integrate GenAI into teaching, learning, and assessment. Rather than assuming that the availability of GenAI automatically leads to its adoption, UTAUT provides a framework for examining the factors that influence people's acceptance and actual use of a new technology.

UTAUT was developed by Venkatesh et al. (2003) through the integration of eight previously established technology acceptance models. The theory identifies four main determinants of technology acceptance and use: performance expectancy, effort expectancy, social influence, and facilitating conditions. According to the theory, these factors influence individuals' behavioural intention to use a technology and, ultimately, their actual technology use. The original UTAUT study reported that the model explained approximately 70% of the variance in behavioural intention, demonstrating its strong explanatory power compared with earlier technology acceptance models (Venkatesh et al., 2003).

For the present study, UTAUT is particularly appropriate because GenAI is an emerging technology whose educational adoption depends heavily on how lecturers perceive its usefulness, ease of use, institutional environment and potential consequences. Lecturers may recognize the benefits of GenAI but remain reluctant to use it because of concerns about academic integrity, inaccurate information, student dependency, privacy or the reliability of AI-generated content. UTAUT therefore provides a useful theoretical basis for examining both lecturers' acceptance and their perceptions of the technology.

UTAUT also provides a structure for organising the literature reviewed in this chapter. Lecturers' perceived benefits of GenAI, such as saved preparation time, personalised learning, and improved feedback, correspond to performance expectancy. The competence and AI literacy needed to use GenAI effectively relate to effort expectancy. Institutional norms and the expectations of colleagues and students reflect social influence. Policies, training, and digital infrastructure constitute facilitating conditions. The risks lecturers perceive, such as threats to academic integrity or unreliable outputs, represent the potential consequences that may weaken their willingness to adopt GenAI even where its usefulness is recognised. The empirical studies below are therefore reviewed in terms of how perceived benefits and perceived risks, together with institutional conditions, shape lecturers' acceptance of GenAI.

2.2 Empirical Review

2.2.1 Lecturers' perceived benefits of GenAI in teaching, learning, and assessment

Studies of lecturers' perceptions of GenAI show that perceived benefits are widely recognised but are conditioned by readiness and institutional support. Three patterns stand out.

First, benefits for teaching centre on efficiency. Tovmasyan (2026), writing on Armenian higher education, found that lecturers saw GenAI as beneficial because it saved time, provided rapid responses, and facilitated personalised learning. Mutanga et al. (2024) reported similar perceptions in South Africa, where lecturers saw AI tools as supporting classroom activities, teaching, and feedback, although perceptions differed according to readiness to integrate the technology. These findings are consistent across contexts, but they also show that the benefit lecturers perceive is not uniform and depends on their preparedness.

Second, perceived benefits appear to influence adoption. Sebihi et al. (2025), in a study involving 130 lecturers and 168 students, established that perceived strengths and benefits of GenAI significantly influenced attitudes, perceived behavioural control, and intentions to adopt it. Watted et al. (2026) found that lecturers identified improved teaching, time management, pedagogical practices, student learning, access to information, and knowledge creation as major opportunities, and that their perceptions were strongly and positively related to the frequency and depth of their GenAI adoption. Together, these studies support the UTAUT premise that performance expectancy shapes acceptance, although they do not explain how lecturers weigh benefits against competing concerns.

Third, evidence from Rwanda shows recognition of benefits alongside limited uptake. Sebihi et al. (2025), at the University of Rwanda, found that teaching and research staff recognised AI's potential to improve higher education through personalised learning, improved access to information, and research and teaching support, yet formal departmental adoption was limited. Niyibizi (2026) similarly associated LLM use with perceived benefits for

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personalised learning, student engagement, assessment feedback, and motivation for lifelong learning. These findings suggest that in Rwanda, perceived usefulness is established but institutional integration is at an early stage, so that perceptions and practice may diverge.

For learning, Garrote Jurado et al. (2024) found that lecturers perceived AI as providing quick responses and supporting personalised learning, and Sebihi et al. (2025) identified personalised learning and access to information as key benefits in the Rwandan higher education context. For assessment, benefits coexist with substantial concerns. Ogunleye et al. (2024) argue that GenAI's ability to perform problem-solving, analysis, and written communication challenges conventional assessment, which may push lecturers towards authentic, process-oriented, and higher-order tasks rather than the exclusion of AI. The assessment evidence is therefore less about straightforward benefit and more about the need for redesign.

2.2.2 Lecturers' perceptions of the risks and challenges of GenAI in teaching, learning, and assessment

The literature increasingly holds that the central question is not whether GenAI should be used but how universities can ensure its use supports learning while protecting academic integrity, equity, and educational quality (Bittle & El-Gayar, 2025; UNESCO, 2025).

In teaching, the same Rwandan studies that report benefits also report constraints. Sebihi et al. (2025) identified concerns about plagiarism, unreliable or unknown information sources, ethical misuse, reduced independent thinking, and inadequate institutional regulation, although with only 32 respondents their findings are exploratory rather than representative of all Rwandan universities. Niyibizi and Umutoni (2026), studying lecturers at a private higher education institution, found that participants valued AI for saving preparation time, personalising feedback, and increasing student engagement, but that integration relied largely on trial and error rather than formal institutional guidance. Inadequate training, unreliable internet connectivity, limited competencies, and the absence of clear institutional policies were reported as barriers. These findings suggest that lecturers' perceptions are shaped not only by the capabilities of GenAI but also by the institutional and technological support available to them, which aligns with the facilitating conditions in UTAUT.

In learning, immediate explanations and individualised assistance may improve access to learning resources. Gatera et al. (2026) reported substantial awareness of GenAI among students, with ChatGPT the most frequently used tool and research a major application. However, Rwandan evidence also identifies risks of overreliance, reduced critical thinking, accuracy problems, and academic-integrity concerns (Numviyumukiza et al., 2024). These risks create challenges for lecturers, who must distinguish between legitimate AI-supported learning and the outsourcing of cognitive work to AI systems. Notably, this evidence largely reflects students' behaviour rather than lecturers' perceptions, so lecturers' own interpretations of these risks remain less explored.

Assessment is perhaps the most immediate challenge. GenAI can produce essays, answers, code, and other assessable outputs, making conventional take-home assignments harder to authenticate. The 2025 HEPI survey reported that 88% of surveyed UK undergraduates had used GenAI in assessment-related activities (Freeman, 2025), and Bittle and El-Gayar (2025) identify academic integrity, authorship, plagiarism, and the reliability of assessment processes as major concerns. Kofinas et al. (2025) suggest that GenAI requires universities to reconsider assessment design rather than rely exclusively on AI-detection technologies. The UK evidence demonstrates the scale of student use, but it comes from a different context and from students, so it cannot substitute for evidence on how Rwandan lecturers perceive and respond to the problem.

2.3 Research gaps and contribution of the present study

Several gaps emerge from the review. The first concerns the Rwandan evidence base, which is small and narrow. The study at the University of Rwanda drew on 32 staff and is exploratory (Sebihi et al., 2025), the study of lecturers' integration experiences focused on a single private institution (Niyibizi & Umutoni, 2026), and other Rwandan work has examined students rather than lecturers (Gatera et al., 2026; Numviyumukiza et al., 2024). Little is known about how lecturers across several universities, including both public and private institutions, perceive GenAI.

The second gap is that benefits and risks are often examined separately. Much of the literature reports opportunities or concerns in isolation, which gives limited insight into how the same lecturers weigh them across teaching, learning, and assessment, even though the evidence suggests that they are intertwined (Ogunleye et al., 2024). The third gap is the dominance of evidence from outside Rwanda and from student or survey data. International studies (Tovmasyan, 2026; Mutanga et al., 2024; Freeman, 2025) show broad patterns, but they say little about the Rwandan context, in which institutional regulation, infrastructure, and local relevance affect how GenAI is perceived. Qualitative evidence capturing lecturers' own explanations is correspondingly limited. The fourth gap is theoretical. Among the studies reviewed, perceptions of GenAI are generally linked to attitudes and intentions to adopt it, but the use of UTAUT to interpret lecturers' perceptions of both benefits and risks, including institutional facilitating conditions, is not evident.

The present study addresses these gaps in four ways. It collects qualitative interview data from 40 lecturers across five universities, two public and three private, which broadens the Rwandan evidence beyond a single institution.

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It examines perceived benefits and risks together, across teaching, learning, and assessment, so that they can be understood in relation to each other. It gives lecturers' own accounts of how they use and evaluate GenAI in a Rwandan context. And it interprets the findings through UTAUT, linking perceived benefits to performance expectancy and institutional policy, training, and infrastructure to facilitating conditions. In doing so, it provides evidence to inform institutional policy, lecturer professional development, and assessment redesign in Rwandan higher education.

III. METHODOLOGY

3.1 Research Design

The study employed an exploratory qualitative research design. A qualitative approach was appropriate because the study sought to understand lecturers' perceptions, experiences, interpretations and concerns regarding the use of GenAI in university teaching, learning and assessment. Rather than measuring the prevalence or statistical relationships among variables, the study focused on understanding how lecturers made sense of GenAI, the benefits they associated with its use, the risks and challenges they encountered.

The exploratory design was particularly appropriate because GenAI represented an emerging phenomenon in higher education and its use within the Rwandan university context was still developing. The approach enabled participants to describe their experiences in their own words and allowed the researcher to identify themes that might not have been adequately captured through predetermined response categories. The study therefore focused on the meanings lecturers attached to GenAI and how these meanings influenced its use in teaching, learning and assessment.

3.2 Study Population and Sample

The study targeted university lecturers drawn from 5 purposively selected universities in Rwanda (2 public and 3 private). Lecturers constituted the appropriate population of interest because they occupy the vantage point from which the phenomenon under study can be most meaningfully observed. They design learning activities, deliver instruction, supervise student work, and administer assessments, the very domains most directly affected by the diffusion of generative AI (GenAI) tools in higher education.

The study employed purposive sampling at two levels: institutional and individual. At the institutional level, universities were selected to capture variation in ownership type (public versus private) and academic context, since governance structures, resourcing, and institutional policy on AI use plausibly shape lecturers' exposure to and experience with GenAI. At the individual level, participants were selected to reflect variation in academic discipline, recognizing that the relevance and risk profile of GenAI differ markedly across fields. Purposive sampling was chosen because the study sought lecturers who could provide rich, experientially grounded insights into GenAI use in teaching, learning, and assessment, rather than a statistically representative cross-section of the population. Given the qualitative and exploratory nature of the study, purposive sampling was therefore more appropriate than probability-based methods, which would have prioritized representativeness over depth and relevance of information.

The study used a sample of 40 lecturers, drawn consistently across the six selected universities (8 lecturers per institution) and distributed across academic disciplines to preserve diversity of perspective. Eligibility required that participants (a) be currently teaching at one of the selected institutions, and (b) demonstrate awareness, experience, or exposure to GenAI tools (e.g., ChatGPT, Gemini, Claude) in the context of teaching, learning, or assessment. Lecturers with no exposure to GenAI were excluded, as their inclusion would have offered little analytic purchase on the research questions and limited the depth of insight the interviews could generate.

3.3 Data collection instruments and procedures

Data were collected using semi-structured interview guides developed from the study objectives and relevant literature on GenAI in higher education. The instruments consisted primarily of open-ended questions, which allowed participants to explain their views and experiences freely. The interview questions focused on three broad areas: (i) lecturers' understanding and experiences of GenAI; (ii) perceived benefits of GenAI for teaching, learning and assessment; (iii) perceived risks and challenges associated with GenAI. Interviews were scheduled at times and locations convenient and appropriate for participants. With participants' permission, the discussions were audio-recorded to ensure accurate capture of their responses. The researcher also maintained field notes documenting relevant contextual observations and reflections during the data collection process. The interviews lasted approximately 30–60 minutes. Data collection continued until sufficient information had been generated to address the research questions and thematic saturation had been achieved. The audio recordings were subsequently transcribed verbatim to facilitate systematic analysis.

3.4 Data Analysis

The qualitative data were analyzed using thematic analysis, guided by the six-phase framework proposed by Braun and Clarke in 2006 and 2021. The analysis involved (1) familiarization with the data, (2) generation of initial

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codes, (3) searching for potential themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the final report.

Following transcription, the researcher repeatedly read the interview transcripts to become familiar with the data. Initial codes were then assigned to meaningful segments of participants' responses. The coding process combined deductive and inductive approaches. Deductive codes were informed by the research objectives and existing literature, while inductive codes emerged directly from participants' accounts. Related codes were subsequently grouped into broader themes concerning perceived benefits, risks, challenges, adoption experiences, responsible use, assessment practices, institutional support and ethical concerns. The researcher compared themes across participants, universities and academic disciplines to identify similarities and differences in lecturers' experiences. Relevant quotations from participants were used to illustrate the major themes in the findings while maintaining participants' anonymity.

3.5 Ethical Considerations

Permission to collect data was obtained from the selected universities and relevant institutional authorities. Participants were provided with clear information concerning the purpose of the study, the nature of their participation, potential benefits and risks, and their right to withdraw from the study without penalty. Informed consent was obtained from all participants before interviews were conducted. Confidentiality and anonymity were maintained throughout the research process. Participants' names and other identifying information were not included in the transcripts or final report. Audio recordings, transcripts and other research materials were stored securely and were accessible only to the research team.

Because discussions concerning GenAI could involve sensitive issues such as academic misconduct, assessment practices and institutional policies, participants were encouraged not to disclose identifiable information about colleagues or students during the interviews. The findings were reported objectively, and care was taken to ensure that individual lecturers and participating universities could not readily be identified from the findings.

IV. FINDINGS & DISCUSSION

4.1 Findings

4.1.1 To examine lecturers' perceptions of the benefits of Generative AI in teaching, learning, and assessment in selected universities in Rwanda

Lecturers generally perceived Generative AI (GenAI) as a useful emerging resource that can improve teaching efficiency, enrich learning experiences, and strengthen assessment practices, although they emphasized the importance of lecturer oversight, ethical use, and students' critical engagement.

Table 1

Development of themes regarding Lecturers' Perceptions of Benefits of Generative **AI**

Initial codes	Category	Final Theme
Faster lesson preparation; generation of teaching materials; creation of examples; alternative explanations; brainstorming of lesson ideas	Teaching preparation and content development	Improved teaching efficiency and content development
Alternative explanations for difficult concepts; immediate learning support; opportunities for practice; independent exploration.	Student learning support	Enhanced student learning and independent learning
Idea generation; creativity; different perspectives; increased student participation; support for reluctant learners.	Student engagement and creativity	Enhanced engagement, creativity and learning experiences
Generation of assessment questions; question variations; rubric development; formative feedback; identification of learning gaps.	Assessment design and feedback	Improved assessment design and formative support
Reduced preparation time; improved teaching materials; more time for student interaction; support for struggling students	Efficiency and improved interaction	Positive outcomes of GenAI integration
Increased access to learning resources; personalized learning; support for large classes; improved academic productivity; digital skills.	Institutional and educational benefits	Broader opportunities for GenAI in Rwandan universities

Based on the themes in Table 1, the findings indicate that lecturers in the selected universities in Rwanda generally perceived Generative AI (GenAI) as a useful emerging technology with the potential to improve teaching efficiency, enhance students' learning experiences, support assessment, and contribute to broader educational development. However, lecturers emphasized that these benefits depend on appropriate human oversight, critical engagement, and contextual adaptation of AI-generated content.

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The findings also indicate that lecturers perceived GenAI as a dual-edged educational technology, presenting both opportunities for enhancing teaching, learning, and assessment and challenges related to academic integrity, authentic learning, assessment validity, privacy, equity, and institutional preparedness. This finding is consistent with Kasneci et al. (2023), Lo (2023), and UNESCO (2023), who emphasize that the educational value of GenAI depends less on the technology itself than on how it is pedagogically integrated, governed, and critically used. The findings further suggest that lecturers' perceptions are shaped by the need to balance technological opportunities with their responsibility to preserve meaningful human engagement and academic standards. Improved teaching efficiency and content development: The first theme, improved teaching efficiency and content development, emerged from lecturers' experiences with lesson preparation and the development of teaching materials. Lecturers reported that GenAI helped them prepare lessons more quickly, generate examples, formulate discussion questions, provide alternative explanations, and brainstorm ideas for classroom activities. Rather than viewing AI as a replacement for their professional role, lecturers mainly regarded it as a supporting tool that could reduce preparation time and provide useful starting points. One lecturer explained:

> *"It helps me prepare lessons more quickly. I can ask it to suggest examples, discussion questions, or alternative explanations, and then I select and improve what is relevant to my students."* Lecturer 3 (29 May 2026). Similarly, another lecturer stated: *"For me, AI is like a teaching assistant. It gives me ideas, but I remain responsible for checking whether the information is accurate and appropriate."* Lecturer 4 (15 May 2026).

These findings suggest that GenAI was primarily perceived as an assistive technology for teaching preparation and content development, and as an augmentative tool that complements rather than replaces professional expertise. The findings are consistent with Kasneci et al. (2023), who identified lesson planning, content generation, and instructional support as important applications of large language models in education, and who identify lesson planning, content generation, and personalized instructional support as important opportunities associated with large language models. Tlili et al. (2023) similarly found that AI-based conversational tools can support educators in developing educational resources and learning activities, and argue that AI-based conversational tools can support teaching and learning when educators maintain appropriate oversight. UNESCO (2023) also recognizes the potential of GenAI to support curriculum development, teaching preparation, and the production of educational materials.

An important dimension of the present findings is lecturers' emphasis on reviewing, editing, and contextualizing AI-generated outputs. This indicates that GenAI-generated materials were not necessarily regarded as ready-to-use instructional resources. Rather, lecturers recognized the need to assess their accuracy, relevance, appropriateness, and alignment with learning objectives. This consideration is particularly significant in the Rwandan higher education context, where educational content may need to reflect local cultural, linguistic, institutional, and socioeconomic realities that generic AI systems may not adequately capture. Thus, the findings position lecturers not merely as users of GenAI but as critical mediators between AI-generated content and educational practice. Enhanced student learning and independent learning: The second theme, enhanced student learning and independent learning, emerged from lecturers' observations that GenAI could provide students with additional explanations, opportunities for practice, and immediate learning support. Lecturers noted that students could use AI to ask questions, simplify difficult concepts, explore alternative explanations, and continue learning outside formal classroom interactions. One lecturer observed:

> *"Students can ask the AI to explain a difficult concept in simpler language or give another example. Some students who are usually reluctant to ask questions in class become more willing to explore independently."* Lecturer 19 (10 May 2026).

This finding suggests that GenAI may provide students with additional opportunities to engage with course content at their own pace. It can therefore complement lecturer-led instruction by providing students with immediate access to explanations and examples. The finding is consistent with Lo (2023), who reported that ChatGPT can support personalized learning and provide students with immediate assistance, and who found that ChatGPT can provide personalized assistance and immediate responses to learners' questions. Kasneci et al. (2023) similarly identify personalized learning and individualized support as potential benefits of large language models. GenAI may therefore expand opportunities for students to obtain explanations, examples, and learning support beyond conventional classroom interactions.

However, the potential for independent learning needs to be balanced with concerns about overdependence, which were also identified by lecturers in the study. Such concerns reinforce the cautions raised by Kasneci et al. (2023) and UNESCO (2023) regarding the possibility that excessive reliance on generative AI could reduce learners' independent intellectual engagement. The issue, therefore, is not simply whether students use GenAI, but how and for what purpose they use it. When GenAI is used to stimulate questioning, comparison, explanation, brainstorming, and reflection, it may support learning. Conversely, when it substitutes for reading, reasoning, problem-solving, and original expression, its educational value may be undermined. The findings consequently support an approach in which GenAI functions as a learning scaffold while students remain responsible for the intellectual work underlying their learning.

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Enhanced engagement, creativity and learning experiences**:** The third theme, enhanced engagement, creativity and learning experiences, was associated with lecturers' observations of students using GenAI to generate ideas, explore different perspectives, and participate more actively in learning activities. Lecturers perceived AI as a tool that could stimulate brainstorming and provide students with multiple possible approaches to a task. As one lecturer stated:

> *"It can stimulate creativity because students are able to generate different ideas and perspectives, but they must not simply accept the first answer produced by the system."* Lecturer 36 (6 June 2026)

This suggests that lecturers viewed creativity as one of the potential educational benefits of GenAI, particularly when students use AI outputs as starting points for further thinking rather than as final answers. The finding is consistent with Kasneci et al. (2023), who note that large language models can facilitate idea generation, interaction, and exploration of different perspectives. Lo (2023) similarly identifies potential benefits of ChatGPT for student engagement and learning support.

However, lecturers' emphasis on critically evaluating AI-generated responses is significant. It indicates that the perceived benefit of GenAI depends on students actively engaging with and questioning the information generated rather than accepting it uncritically. Improved assessment design and formative support: The fourth theme, improved assessment design and formative support, emerged from lecturers' experiences using GenAI to develop assessment questions, generate variations of questions, prepare rubrics, and provide formative feedback. Lecturers perceived these functions as potentially reducing the time required to prepare assessments and enabling them to provide more immediate support to students.One lecturer explained:

> *"I can use AI to generate different versions of questions and then modify them according to the learning outcomes. It saves time during assessment preparation."* Lecturer 2 (6 May 2026).

Another lecturer highlighted the potential for formative feedback:

> *"For formative assessment, AI can help students receive immediate feedback and suggestions for improvement, while I can concentrate more on the higher-level evaluation."* Lecturer 8 (1 May 2026)

These findings are consistent with Kasneci et al. (2023) and Tlili et al. (2023), who identify assessment design, feedback, and learning support as potential applications of GenAI. The findings also suggest that lecturers perceived AI as a tool that could support rather than replace professional assessment judgment. Lecturers emphasized that AI-generated questions, feedback, and other assessment materials should be reviewed and adapted to ensure their alignment with learning outcomes. These applications suggest that GenAI could contribute to assessment efficiency and enable lecturers to diversify learning and assessment activities.

Assessment emerged as one of the most significant areas in which lecturers perceived both opportunities and challenges. At the same time, assessment represented a major area of concern because GenAI complicates the determination of whether submitted work accurately represents students' own knowledge, skills, and abilities. This finding corresponds with Cotton et al. (2024), who discuss the implications of ChatGPT for academic integrity, and Yan et al. (2024), who argue that GenAI requires higher education institutions to reconsider conventional approaches to assessment. The findings therefore point towards the importance of assessment redesign rather than simply attempting to prevent AI use.

In this regard, greater emphasis may be placed on authentic assessment approaches that require students to demonstrate application, reasoning, reflection, problem-solving, practical performance, and the ability to explain or defend their work. Such approaches do not necessarily eliminate the possibility of AI assistance, but they can provide richer evidence of students' learning processes and understanding. The findings consequently suggest that GenAI is challenging universities to reconsider what constitutes convincing evidence of learning in contemporary higher education. Positive outcomes of GenAI integration: The fifth theme, positive outcomes of GenAI integration, emerged from lecturers' specific experiences of using AI in their teaching practices. The main benefits included saving preparation time, improving the variety of teaching resources, providing additional explanations, supporting struggling students, and creating more opportunities for lecturer–student interaction. One lecturer recalled:

> *"I once used AI to create several examples of a concept that students were struggling with. After adapting them to our local context, the discussion in class became much more active."* Lecturer 26 (18 May, 2026).

Another lecturer explained:

> *"The benefit was not that AI gave me a perfect answer. The benefit was that it gave me a starting point, and I could spend more time improving the lesson and interacting with students."* Lecturer 21 (19 May, 2026)

These experiences demonstrate that lecturers perceived the greatest benefits when GenAI augmented their existing teaching practices. Rather than replacing lecturers, AI enabled them to save time on routine preparation and devote greater attention to pedagogical interaction and contextualization. This finding supports Kasneci et al. (2023), who argue that GenAI can augment educators' work, and UNESCO (2023), which emphasizes the importance of maintaining human oversight in the use of GenAI in education. Broader opportunities for GenAI in Rwandan universities: The sixth theme, broader opportunities for GenAI in Rwandan universities, emerged from lecturers' views about the wider contribution that GenAI could make to higher education. Lecturers identified increased access to

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learning resources, personalized learning, support for large classes, improved academic productivity, development of digital competencies, and greater educational innovation as potential benefits. One lecturer stated:

> *"For Rwandan universities, AI could help us provide more learning support to students, especially where lecturers have many students and limited time for individual consultation."* Lecturer 10 (16 May, 2026).

Another lecturer emphasized the importance of contextual relevance:

> *"The real opportunity is to use AI while still making education relevant to Rwanda: our examples, our communities, our languages and our development priorities."* Lecturer 5 (9 May, 2026).

These findings indicate that lecturers perceived GenAI as having potential beyond individual classroom activities. It could contribute to addressing challenges associated with large student populations, limited lecturer time, access to learning resources, and the development of digital competencies. However, lecturers emphasized that these benefits would be greater when AI-generated content is adapted to the Rwandan context. This finding is consistent with UNESCO (2023), which advocates a human-centred, inclusive, and context-sensitive approach to GenAI in education. It also supports Lo (2023), who argues that the educational value of GenAI depends on how the technology is integrated into pedagogical practice.

4.1.2 Lecturers' perceptions and experiences of the risks and challenges associated with the use of Generative AI in teaching, learning, and assessment

The findings indicate that lecturers in the selected universities in Rwanda recognized several risks and challenges associated with the use of Generative AI (GenAI) in teaching, learning, and assessment. These concerns were organized into nine themes: threats to academic integrity; overdependence on GenAI and risks to independent learning; unreliability of AI-generated information; challenges to authentic assessment; privacy, confidentiality and ethical challenges; institutional policy and governance challenges; limited lecturer AI readiness and professional development needs; digital inequality and unequal access to GenAI; and the need for contextualized and locally relevant GenAI use. The findings broadly correspond with previous studies that emphasize the need for human-centred, ethical, and context-sensitive approaches to GenAI adoption in higher education (Kasneci et al., 2023; UNESCO, 2023).

Table 2

Development of themes on Risks and Challenges Associated with GenAI

Initial codes	Category	Final Theme
AI-generated assignments; cheating; plagiarism; uncertainty about authorship; difficulty identifying AI-generated work.	Academic integrity concerns	Threats to academic integrity
Students seeking immediate answers; reduced effort; dependence on AI; reduced independent thinking; limited problem-solving.	Student dependence and learning concerns	Overdependence on GenAI and risks to independent learning
Incorrect answers; fabricated references; misleading information; unreliable outputs; need for fact-checking.	Accuracy and reliability concerns	Unreliability of AI-generated information
Difficulty verifying students' own work; AI-generated assignments; unreliable AI detection; need for oral and practical assessment.	Assessment authenticity	Challenges to authentic assessment
Student data; confidential documents; examination questions; personal information; privacy concerns.	Data protection and ethical concerns	Privacy, confidentiality and ethical challenges
Lack of clear guidelines; uncertainty about acceptable AI use; inconsistent practices; unclear responsibilities.	Institutional governance gaps	Institutional policy and governance challenges
Limited AI training; lack of technical knowledge; difficulty keeping up with new AI tools; need for professional development.	Lecturer preparedness	Limited lecturer AI readiness and professional development needs
Unequal internet access; differences in devices; limited access to paid AI tools; differences in digital skills.	Digital access and equity	Digital inequality and unequal access to GenAI

Threats to academic integrity: The first theme, threats to academic integrity, emerged from lecturers' concerns about AI-generated assignments, cheating, plagiarism, uncertainty about authorship, and difficulties in determining whether students had personally produced submitted work. Lecturers indicated that GenAI had made it more difficult to distinguish between legitimate assistance and work completed largely by AI. One lecturer explained:

> *"The biggest challenge is that sometimes you receive an assignment that is very well written, but you are not sure whether the student actually produced the work or simply instructed AI to do it."* Lecturer 5 (9 May, 2026).

Another lecturer stated:

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> *"It has become difficult to distinguish between a student who has understood the topic and one who has simply obtained a good answer from ChatGPT."* Lecturer 14 (11 May, 2026)

The findings suggest that lecturers understood academic integrity as involving more than conventional plagiarism. Their concern was also whether students' submitted work provided genuine evidence of their own knowledge and intellectual effort. This is consistent with Cotton et al. (2024), who identify significant academic-integrity challenges associated with ChatGPT in higher education. UNESCO (2023) similarly identifies academic integrity as an important concern requiring universities to reconsider how AI is used and governed.

Overdependence on GenAI and risks to independent learning: The second theme, overdependence on GenAI and risks to independent learning, emerged from lecturers' observations that some students may use AI to obtain immediate answers instead of attempting to understand problems independently. Lecturers associated excessive reliance on AI with possible reductions in students' problem-solving, critical-thinking, writing, and independent-learning abilities. As one lecturer observed:

> *"Some students want the answer immediately. Instead of trying to understand the problem first, they ask AI to solve it for them."* Lecturer 28 (23 May, 2026).

Another lecturer noted:

> *"If students use AI for every assignment, there is a danger that they become dependent on it and gradually lose confidence in their own ability to think and write."* Lecturer 40 (14 June, 2026)

These findings correspond with Kasneci et al. (2023), who identify overreliance on large language models as an important educational concern. Lo (2023) also discusses concerns about the effects of ChatGPT on students' independent learning and thinking. UNESCO (2023) emphasizes that GenAI should support rather than replace human intellectual agency. Thus, lecturers' concern was not necessarily about AI use itself, but about situations where AI becomes a substitute for students' own learning efforts.

The findings concerning academic integrity and student dependence further demonstrate the tension between the opportunities and risks associated with GenAI. Lecturers were concerned that students could use AI to generate assignments or obtain answers without engaging meaningfully in the learning process. This concern is consistent with Cotton et al. (2024) and UNESCO (2023), who identify academic integrity and human agency as important considerations in the use of GenAI in education.

Importantly, the findings indicate that lecturers did not necessarily regard AI use itself as equivalent to academic misconduct. Rather, their concerns centred on whether AI use displaced the intellectual effort, authorship, and learning processes that students were expected to demonstrate. This distinction is important because it suggests that institutional responses should move beyond blanket prohibition towards clearly defining acceptable and unacceptable forms of AI use. Clear expectations concerning disclosure, attribution, verification, and the extent of permitted AI assistance may provide a more sustainable basis for academic integrity in an environment where GenAI is increasingly accessible.

Unreliability of AI-generated information: The third theme, unreliability of AI-generated information, concerned inaccurate answers, fabricated references, misleading information, and the need to verify AI-generated content. Lecturers reported that AI could produce responses that appeared convincing even when the information was incorrect. One lecturer stated:

> *"The problem is that AI can give an answer with great confidence even when the answer is wrong. A student who does not have enough knowledge may not recognize the mistake."* Lecturer 1 (1 May, 2026).

Another explained:

> *"I have seen references generated by AI that look genuine, but when you check them, you cannot find the article or the details are incorrect."* Lecturer 9 (11 May, 2026).

These observations are consistent with Kasneci et al. (2023) and Lo (2023), who highlight the possibility of inaccurate or misleading AI-generated information. UNESCO (2023) similarly emphasizes the need for users to critically evaluate and verify AI outputs. The findings therefore indicate that effective GenAI use requires AI literacy that includes fact-checking, source verification, and critical evaluation, rather than simply knowing how to operate AI tools.

Challenges to authentic assessment: The fourth theme, challenges to authentic assessment, emerged from lecturers' concerns about AI-generated assignments, the difficulty of verifying students' actual learning, and the limitations of AI-detection tools. Lecturers questioned whether conventional take-home assignments, essays, and unsupervised online assessments could continue to provide reliable evidence of individual learning. One lecturer explained:

> *"Assessment is probably where AI has created the biggest problem for lecturers. If the student can generate the answer in a few seconds, then we have to rethink what we are actually assessing."* Lecturer 11 (16 May, 2026).

Lecturers therefore described greater interest in oral presentations, practical demonstrations, classroom activities, projects, reflective tasks, and assessments requiring students to explain their reasoning. They also expressed caution about treating AI-detection tools as conclusive evidence of misconduct. As one lecturer stated:

> *"We cannot simply use an AI detector and say that the student cheated. These systems are not perfect, so we still need human judgment and other evidence."* Lecturer 15 (20 May, 2026).

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These findings correspond with Cotton et al. (2024) and Yan et al. (2024), who discuss the challenges GenAI creates for conventional assessment practices. UNESCO (2023) similarly argues that institutions need to reconsider what, why, and how students are assessed. The findings therefore suggest a movement towards assessment practices that emphasize reasoning, application, reflection, process, and demonstrated understanding rather than only the final written product. Privacy, confidentiality and ethical challenges: The fifth theme, privacy, confidentiality and ethical challenges, emerged from concerns about entering sensitive information into publicly available AI systems. Lecturers identified student assignments, examination questions, research information, institutional documents, and personal data as information requiring careful handling. One lecturer explained:

> *"We have to be careful about what information we put into these systems. A lecturer may copy a student's work into an AI tool without thinking about confidentiality."* Lecturer 12 (22 May, 2026).

Another stated:

> *"Students also need to understand that they should not put personal or confidential information into an AI system simply because they want an answer."* Lecturer 31 (29 May, 2026).

These concerns are consistent with UNESCO (2023), which identifies privacy and data protection as important considerations in the educational use of GenAI. The findings suggest that universities need to provide practical guidance on what information may be entered into AI systems and how student and institutional data should be protected.

The concerns reported by lecturers regarding inaccurate information, fabricated references, privacy, and contextual limitations further demonstrate the importance of AI literacy among both lecturers and students. Kasneci et al. (2023) and Lo (2023) caution that AI-generated responses can contain factual inaccuracies, while UNESCO (2023) emphasizes data privacy, ethical considerations, and the need for critical evaluation of AI outputs.

Consequently, effective GenAI integration in Rwandan universities requires users to develop the capacity to verify information, evaluate the credibility of sources, identify potentially fabricated or misleading content, protect confidential and personal information, and critically contextualize AI-generated materials. These competencies should be understood as components of broader digital and academic literacy rather than as technical skills alone. The findings therefore suggest that introducing GenAI without developing corresponding critical-use competencies could increase rather than reduce educational risks.

Institutional policy and governance challenges: The sixth theme, institutional policy and governance challenges, emerged from lecturers' uncertainty about acceptable and unacceptable uses of GenAI. Some lecturers indicated that students asked whether AI use was permitted, while lecturers themselves did not always have clear institutional guidance. One lecturer explained:

> *"Students ask us whether they are allowed to use ChatGPT, but sometimes we ourselves do not have a clear institutional answer."* Lecturer 6 (10 May, 2026).

Another lecturer emphasized:

> *"We need a policy that distinguishes between using AI as a learning aid and using it to produce work that is supposed to demonstrate the student's own ability."* Lecturer 18 (21 May, 2026).

This finding is consistent with UNESCO (2023), which calls for coherent institutional frameworks to guide the responsible use of GenAI. It also corresponds with the Rwanda-specific work of Sebihi et al. (2025), which highlights issues of AI readiness, policy, and institutional challenges in higher education at the University of Rwanda. The findings suggest that policy uncertainty can result in inconsistent expectations among lecturers and students and therefore requires clear institutional guidance.

Limited lecturer AI readiness and professional development needs: The seventh theme, limited lecturer AI readiness and professional development needs, emerged from lecturers' concerns about insufficient training and the rapid development of AI technologies. Lecturers indicated that they needed support not only in using AI tools but also in understanding their pedagogical, ethical, and assessment implications. One lecturer stated:

> *"AI is developing faster than our training. Sometimes students know about a new tool before the lecturer has had an opportunity to learn how it works."* Lecturer 18 (21 May, 2026)

Another explained:

> *"We need training not only on how to use AI, but also on how to redesign our assessments and teach students to use AI responsibly."* Lecturer 6 (10 May, 2026).

These findings support UNESCO (2023), which identifies capacity development and AI literacy as important conditions for responsible implementation. The findings also correspond with Niyibizi and Umutoni (2026), whose Rwanda-based study examines lecturers' experiences of AI integration and associated support needs. The lecturers' responses suggest that professional development should cover AI literacy, prompting, verification of outputs, ethics, privacy, assessment redesign, and pedagogical integration. Digital inequality and unequal access to GenAI: The eighth theme, digital inequality and unequal access to GenAI, emerged from lecturers' concerns about differences in students' access to devices, internet connectivity, paid AI services, and digital skills. One lecturer observed:

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"We should not assume that every student has the same access to AI tools. Some students have good internet and devices, while others struggle even to access the basic online learning materials." Lecturer 12 (22 May, 2026).

This finding highlights the possibility that GenAI could create or reinforce differences in students' learning opportunities if access is uneven. The finding is consistent with UNESCO (2023), which identifies equity and the digital divide as important considerations in the adoption of GenAI. In the Rwandan university context, responsible adoption therefore needs to be considered alongside broader access to digital infrastructure and learning technologies. Finally, the findings concerning institutional policies, lecturer preparedness, and unequal access indicate that successful GenAI adoption cannot depend solely on individual lecturers or students. UNESCO (2023) emphasizes institutional governance, capacity development, equity, and human-centred implementation as important elements of responsible GenAI adoption in education. The Rwanda-specific findings reported by Sebihi et al. (2025) similarly highlight issues of AI readiness, policy, and institutional challenges within higher education.

These findings suggest that Rwandan universities require a coordinated institutional approach to GenAI. Such an approach may include clear guidelines defining acceptable AI use, continuous professional development for lecturers, AI-literacy programmes for students, assessment redesign, mechanisms for protecting data and privacy, and strategies for addressing unequal access to AI-enabled technologies. Institutional policies should also be sufficiently adaptable to accommodate technological developments rather than relying on rules that may quickly become outdated. Equity is particularly important because differences in access to reliable internet connectivity, digital devices, and AI tools may influence students' ability to benefit from GenAI. Consequently, responsible adoption requires universities to consider not only whether GenAI is educationally useful but also who can access it, under what conditions, and with what level of support.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The findings indicate that lecturers in the selected universities in Rwanda perceive Generative AI (GenAI) as both an opportunity and a challenge for higher education. On the one hand, GenAI can enhance lesson preparation, content development, student learning, creativity, feedback, and assessment, while improving lecturers' efficiency and supporting more personalized learning. On the other hand, its use raises concerns about academic integrity, student overdependence, inaccurate information, assessment validity, privacy, unequal access, and limited institutional preparedness.

These findings have important implications for higher education practice and policy in Rwanda. They suggest that the successful integration of GenAI requires universities to move beyond simply providing access to the technology and instead establish supportive structures that promote its responsible use. This includes strengthening lecturers' and students' digital and AI literacy, developing context-appropriate institutional guidelines, and adapting teaching and assessment practices to preserve academic integrity and independent learning. Such measures can help universities maximize the educational potential of GenAI while mitigating its risks and ensuring equitable, ethical, and quality-focused adoption.

5.2 Recommendations

Based on the above findings, the study makes the following recommendations. First, universities should develop clear policies on the acceptable, ethical, and transparent use of Generative AI in teaching, learning, and assessment, so that lecturers and students share a common understanding of what is permitted and what is not. Second, universities should provide regular AI-literacy training for lecturers and students, focusing on the effective, critical, ethical, and responsible use of Generative AI. Third, universities should redesign assessment methods to emphasize students' understanding, critical thinking, practical skills, reflection, and independent work, so that assessment continues to provide credible evidence of individual learning. Fourth, lecturers should verify and contextualize AI-generated information before using it in teaching or assessment, to ensure its accuracy, relevance, and suitability to the Rwandan context. Finally, universities should promote equitable access to AI technologies by strengthening digital infrastructure and providing appropriate support to reduce inequalities among students.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding Declaration

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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