

A peer-reviewed open-access journal indexed in NepJol

ISSN 2990-7640 (online); ISSN 2542-2596 (print)

Published by Molung Foundation, Kathmandu, Nepal

Article History: Received on 19 January 2026; Accepted on 15 June 2026

DOI: <https://doi.org/10.3126/mef.v16i2.97571>

Unlocking Digital Potential: University Teachers' Perspectives on ICT Resource Availability in Nepal

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Abstract

This study aims to examine teachers' experiences and perceptions of access to ICT resources and materials, and their impact on their teaching methods. Using a basic qualitative study design, in-depth interviews were conducted with seven purposively selected economics teachers, and data were analyzed thematically. Findings reveal significant disparities in access to ICT resources, with some teachers facing challenges due to outdated equipment and poor internet connectivity, while others benefited from improved ICT integration. Teachers at Tribhuvan University are motivated to incorporate ICT into their teaching practices, but the availability of resources remains a significant barrier. These disparities highlight the need for targeted policy interventions to ensure equitable access to resources and enhance ICT integration across all departments, improving both teaching effectiveness and student engagement.

Keywords: ICT resources, access, economics teachers, Tribhuvan University, policy implications

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The integration of Information and Communication Technology (ICT) into the teaching-learning process has become an essential component of modern education (Hong, 2016; Ifinedo & Rikala, 2020; Rana & Rana, 2020). ICT not only facilitates interactive and engaging learning environments but also empowers teachers to present complex concepts more effectively (Ifinedo et al., 2019; Ismail et al., 2020). Without these foundational resources, even the most motivated educators face challenges in leveraging ICT for educational purposes (Khan, 2021; Singhavi & Basargekar, 2019; Warren, 2020).

Material access to ICT resources forms the bedrock of its effective utilization in the teaching-learning process. Studies underscore that inadequate access to technology significantly hinders teachers' ability to integrate ICT into their pedagogy (Alivo et al., 2022; Scroggins, 2020). For university-level educators, particularly those teaching complex and data-driven subjects like economics, the availability of ICT tools is crucial.

Despite the proven benefits, material constraints remain a persistent challenge, especially in developing countries (Ismail et al., 2020; Mathrani et al., 2021). Tribhuvan University, being the oldest and largest university in Nepal, reflects these challenges within its teaching community (Joshi, 2022b, 2023). The literature identifies several dimensions of material barriers to ICT use, including the lack of sufficient computers, outdated software, limited internet access, and inadequate technical support (Gunawardena & Dhanapala, 2023; Warren, 2020). Furthermore, disparities in resource allocation between urban and rural campuses exacerbate the problem, leaving teachers in resource-constrained settings at a disadvantage (Goh et al., 2016; H. van de Werfhorst et al., 2020; Wu et al., 2019). Economics teaching, with its reliance on data interpretation, modeling, and visualization, necessitates specialized ICT tools.

In the context of Tribhuvan University, economics teachers often face challenges related to resource availability, affecting their ability to deliver ICT-integrated teaching (Joshi, 2022b, 2023). Therefore, understanding the specific material needs of economics teachers is essential to devising strategies for effective ICT integration.

This study aims to explore the material access to ICT resources among economics teachers at Tribhuvan University. By focusing on their experiences and perspectives, it seeks to uncover the gaps in resource availability and their implications for teaching-learning.

Literature Review

Resource-constrained institutions face challenges like outdated hardware, unreliable internet, and insufficient technical support, which hinder innovative teaching practices and sustain reliance on traditional methods (Scroggins, 2020; Singhavi & Basargekar, 2019; Wallace, 2012). In economics teaching, tools like SPSS, Stata, and EViews are vital for linking theory with practical applications and enhancing analytical skills. At Tribhuvan University, Nepal, economics teachers encounter significant barriers in accessing these resources, where resource disparities are more pronounced (Joshi, 2022a, 2022b, 2023).

Resource Availability

Adequate access to resources is essential for teachers to effectively incorporate ICT into their pedagogy. Studies emphasize that limited availability of ICT resources is a significant barrier to effective integration, particularly in developing countries where technological infrastructure is often underdeveloped (Cha et al., 2020; Ismail et al., 2020; Tabira & Otieno, 2017). The availability of basic resources such as computers, reliable internet connections, and updated software is pivotal for creating a conducive environment for ICT-enhanced education (Deeley, 2021; Ifinedo & Rikala, 2020).

Hardware and Software Access

Access to adequate hardware, such as computers, projectors, and other digital tools, is foundational for ICT integration (Masango, 2014; Stephens, 2020). However, research shows that in many educational institutions, especially in developing countries, the lack of sufficient hardware is a recurring challenge (Enrique Hinostroza, 2018; Ismail et al., 2020; N. Mndzebele, 2013). For economics education, tools like Stata, SPSS, and EViews are critical for enabling data-driven learning and practical application of economic concepts (Kimanzi, 2021; Lewis & Martin, 2018).

Internet Connectivity

Limited internet availability has been identified as a major impediment to ICT integration, particularly in rural and resource-constrained settings (Scheerder et al., 2020). Disparities in internet connectivity between urban and rural campuses exacerbate inequalities in ICT resource access (Goh et al., 2016; Pearce MS, 2020; Wu et al., 2019).

Technical Support

Studies highlight that the lack of on-demand technical assistance is a significant barrier, discouraging teachers from adopting ICT in their teaching practices (Chasubuta & Ndibalema, 2024; Martinez & Nguyen, 2014). Without adequate support, even teachers with access to ICT resources may struggle to utilize them effectively (Işık et al., 2012).

Economic Teaching and Specialized ICT Tools

The availability of specialized software such as Stata, SPSS, and MATLAB plays a pivotal role in enhancing the teaching-learning process in economics (Işık et al., 2012; Nji & Idika, 2018). These tools enable teachers to simplify complex economic theories and provide students with hands-on experience in data interpretation and policy analysis. However, limited access to such resources often forces teachers to rely on traditional methods, which may not adequately prepare students for the analytical demands of the field (Goh et al., 2016; Onoja, 2020).

Institutional Disparities in Resource Allocation

Unequal resource distribution within and across educational institutions further complicates ICT integration. Research suggests that urban campuses are more likely to have better access to ICT resources compared to their rural counterparts, creating disparities in teaching quality (Goh et al., 2016).

Impact of Resource Availability on Teachers' Motivation

When teachers lack access to the necessary tools, they are less likely to engage in ICT-based teaching, perceiving it as an added burden rather than an enabler (Deeley, 2021; Ifinedo & Rikala, 2020; Wu et al., 2019). Conversely, access to adequate resources boosts teachers' confidence and encourages innovative teaching practices, ultimately benefiting students' learning experiences.

Methods of the Study

This study employed a basic qualitative study design to explore the perspectives of economics teachers at Tribhuvan University regarding the availability of ICT resources for integration in the teaching-learning process. The study aimed to provide an in-depth understanding of participants' experiences and perceptions concerning the material access to ICT tools and resources. The study was conducted at Tribhuvan University, focusing specifically on economics teachers. Participants were selected using purposive sampling to ensure they possessed relevant experiences and insights into ICT use in teaching. A total of 7 economics teachers participated in the study, representing diverse experiences and teaching contexts within the university.

Data was collected through in-depth interviews guided by a semi-structured interview protocol comprising open-ended questions. The interview guide was designed to elicit rich and detailed responses regarding participants' access to ICT resources, challenges encountered, and strategies for ICT integration in teaching. Interviews were conducted in a

conversational manner, allowing participants to freely share their perspectives while the researcher probed for deeper insights where necessary.

The collected data were analyzed thematically following a systematic process by using Atlas.ti software. First, the collected data were transcribed, translated into English, and read repeatedly to gain familiarity and a deeper understanding of the participants' information. Then, the initial codes were generated by finding the research question's aligned statements and patterns within the information. After that, similar codes were organized into broader categories to develop possible themes. Moreover, the themes created were carefully reviewed and refined to ensure their consistency and relevance to the research questions. Finally, the themes were clearly defined, named, and interpreted to make a comprehensive understanding of the results.

Ethical Considerations

Ethical principles were upheld throughout the research process. Participants provided informed consent before participating in the study, ensuring they understood the purpose, procedures, and voluntary nature of their involvement. The researcher ensured anonymity by removing any identifiable information from transcripts and analysis. Confidentiality was maintained by securely storing data and limiting access to authorized individuals only. The collected data was used exclusively for the purpose of this research, adhering strictly to ethical research guidelines.

Findings of the Study

This section presents the findings of the study, focusing on the material access to ICT resources among economics teachers at Tribhuvan University.

Material Access to ICT Resources

Material access to ICT resources emerged as a crucial issue to effective integration of ICT in teaching and learning within the economics department at Tribhuvan University. One teacher, who did not use ICT in their classroom, highlighted a disparity in resource availability across campus departments: "Our campus provides a projector for teaching purposes, and electrical connections are set up in the classrooms. Teachers have access to internet facilities on campus, and students who obtain the password can also use this service. However, internet access is not available in the economics classrooms; it is only accessible in the CSIT classrooms." This response underscores the unequal distribution of ICT resources across different departments. Specifically, the economics department faces limitations in internet access within its classrooms, which restricts the integration of technology into the teaching-learning process.

Another participant, who expressed interest in using ICT in their teaching but encountered resource-related obstacles, described the situation as follows: “The availability of ICT materials in our department cannot be described as sufficient. There are a few resources, such as second-hand laptops and an old projector in the economics department, but the internet provided through the administration suffers from poor bandwidth. While there is some knowledge about ICT tools, there is a lack of practical application. Moreover, the internet in the department is not as functional or reliable as what we have at home.” This participant pointed out the inadequacies in available resources, such as outdated equipment and insufficient internet speeds, which hinder their ability to effectively incorporate ICT tools in their teaching of economics. The lack of reliable internet connectivity further exacerbates the issue, making it difficult for teachers to utilize online resources or engage in interactive activities that require a stable connection.

A senior faculty member, who was less inclined to use ICT in their teaching, shared a similar sentiment: “There is a Wi-Fi zone, and an ICT lab on our campus, but there is no effect of such things on other teachers. There is no availability of projectors, internet, and other ICT tools in economics classrooms; if we need them, we need to go to the ICT lab. There is no provision of laptops on campus, and teachers who teach at the master's level bring their own laptops, but I only teach at the bachelor's level.” This statement highlights a significant issue of resource allocation and availability. The reliance on ICT labs for necessary tools, such as projectors and laptops, reflects an uneven distribution of resources that limits their effective use in economics classrooms. Additionally, the absence of campus-provided laptops forces teachers to rely on personal devices, which may not be suitable for all teaching situations.

In contrast, a participant from a community campus where ICT resources were being gradually integrated shared a more positive outlook: “Our College is gradually placing more emphasis on integrating technology into the teaching-learning process. The college provides internet access in the classrooms, and if we wish to use smart board or projector to display documents or videos, it is easily accessible. Currently, the college uses the E-school app to record student attendance. However, if multiple teachers request the projector at the same time, it becomes unavailable for all classes.” This response indicates a growing recognition of the importance of ICT integration in the teaching-learning process.

On the other hand, a participant from a community campus in a rural area with fewer resources shared a more challenging experience: “In our classroom, there is no access to the internet or projector; however, the administration has internet and computer facilities. The

available internet has low bandwidth, making it difficult to conduct classes via Zoom, watch YouTube, or use messaging services in the college classroom. I conduct my Zoom classes from home instead.” This response illustrates the significant infrastructural challenges faced by some campuses. With unreliable internet and no access to projectors in the classroom, the teacher is forced to conduct online classes from home, indicating the lack of resources necessary for effective teaching at the campus itself.

Motivation and Perceptions through Resource Access

The findings from the teachers' responses reveal a strong connection between access to ICT resources and the motivation to integrate technology into teaching at Tribhuvan University. The responses reflect a range of experiences and challenges related to resource availability and its impact on the teaching-learning process. Several participants reported limited access to ICT resources, which significantly impacted their motivation to integrate technology in their classrooms. For instance, Participant 1 from a community campus stated, "When the resources are available, I feel motivated to use them, but without reliable access, it's hard to stay motivated to integrate technology in teaching." This sentiment was echoed by Participant 2 from a constituent campus, who highlighted the frustration of dealing with inadequate resources such as poor internet bandwidth and outdated projectors, which diminished their ability to engage students effectively.

Despite resource constraints, some teachers expressed a strong belief in the potential of ICT to enhance teaching. Participant 3, a senior faculty member, shared, "As I see the younger generation embracing technology, I feel more motivated," although the lack of reliable resources, such as projectors and stable internet, remained a barrier to full ICT integration. Similarly, Participant 4, a younger faculty member, expressed excitement about the possibilities of ICT in economics teaching but noted that outdated or poorly maintained resources hindered their ability to implement technology effectively.

Discussion of the Findings

The findings from this study highlight a significant challenge in the integration of ICT in teaching within the economics department at Tribhuvan University, particularly related to material access to ICT resources.

Disparities in Access to ICT Resources

This study found that some teachers had access to necessary resources, such as projectors and internet facilities, while others faced significant limitations. For example, a lack of internet connectivity in economics classrooms restricted the potential for ICT integration, with teachers being unable to access online resources or implement interactive

learning methods. This observation reflects the findings of a similar study by H. G. van de Werfhorst et al. (2022), which reported that inconsistent access to ICT resources in higher education institutions created disparities in teaching practices and student learning experiences. The scarcity of reliable internet connections is a critical issue in many developing countries, as it hampers the ability of teachers to use the internet for research, collaboration, and the use of online educational tools (Ismail et al., 2020; N. Mndzebele & Invention, 2013).

Additionally, the issue of outdated or second-hand equipment, such as laptops and projectors, further exacerbates the challenges faced by economics teachers. These resources, while functional to some extent, are often unreliable and limit the range of technological applications teachers can use in their classrooms. This issue mirrors findings from previous research, where the reliance on outdated equipment was found to be a barrier to the effective use of ICT in education (Amangeldi & Udi, 2023). Moreover, the absence of campus-provided laptops, with teachers needing to bring their own devices, reflects a resource allocation issue that affects both the teachers' preparedness and the consistency of technology use across classrooms (Joshi, 2023).

Uneven Resource Allocation and Its Impact on Teaching Practices

The uneven distribution of ICT resources across different departments and campuses at Tribhuvan University mirrors broader challenges observed in other higher education institutions globally (Mathrani et al., 2021). While some campuses have made progress in integrating technology into teaching, others, especially those in rural or less-resourced areas (Cruz, 2020; Jha & Pandey, 2016), continue to face significant barriers. For example, a participant from a community campus with fewer resources shared their experience of having to conduct online classes from home due to a lack of reliable internet and classroom ICT tools. This finding is consistent with research by Singhavi and Basargekar (2019), who highlight how inadequate access to ICT resources limits the ability of teachers to fully integrate technology into their teaching practices.

This disparity in resource availability not only affects teachers' ability to use ICT effectively but also impacts the overall teaching and learning experience. As stated by some participants, limited access to essential tools like projectors or smart boards often results in teachers having to rely on alternative, less effective methods. This situation is supported by Benjamin et al. (2022), who argue that the lack of appropriate ICT resources in classrooms limits the potential for technology to transform pedagogical practices and enhance student engagement.

Motivation and Perceptions of ICT Integration

Another important theme that emerged from the data was the relationship between resource availability and teachers' motivation to integrate ICT into their teaching. Several teachers indicated that when resources were available, they felt more motivated to use technology in their classrooms, but the lack of reliable resources diminished this motivation. This aligns with the findings of a study by Sharma and Srivastava (2020), which emphasized that teachers' perceptions of ICT availability directly influence their willingness to integrate technology into their teaching practices. The study also found that teachers who perceive technology as easily accessible are more likely to use it effectively in their teaching.

Moreover, some participants expressed frustration over inadequate resources, such as poor internet bandwidth and outdated projectors, which impeded their ability to effectively engage students through ICT. This is consistent with the findings of Graham et al. (2020), who reported that even if teachers were enthusiastic about using ICT, the lack of sufficient resources often led to frustration and disengagement. The frustration expressed by some senior faculty (Chai et al., 2019) members, who were less inclined to use ICT due to the perceived lack of resources, further supports this claim. It suggests that teachers' motivation to adopt technology is closely tied to their access to functional and reliable resources.

Despite these barriers, several teachers expressed a strong belief in the potential of ICT to enhance teaching, suggesting that positive perceptions of ICT's educational benefits can motivate teachers to overcome infrastructural challenges. This optimism is in line with findings from Chai et al. (2019), who argue that teachers' perceptions of the potential benefits of ICT for enhancing teaching and student learning can drive efforts to overcome material constraints.

Implications for Policy and Practice

The findings of this study highlight the need for targeted policy interventions to address the disparities in ICT resource access at Tribhuvan University. For effective ICT integration, it is essential that universities invest in upgrading outdated equipment, improving internet connectivity, and ensuring equitable access to ICT tools across all departments and campuses. As indicated by the literature, ensuring that teachers have access to reliable ICT resources is fundamental to fostering a positive attitude toward technology integration (Masango, 2014).

Additionally, it is crucial to provide professional development opportunities that not only improve teachers' ICT skills but also equip them with strategies for using available

resources effectively. This is particularly important in contexts where teachers may have limited access to technology, as it can help them make the most of the resources they have.

Conclusion

While there is a growing recognition of the potential benefits of ICT, these can only be realized if teachers have consistent access to reliable resources. Policymakers and university administrators must prioritize infrastructure development and resource allocation to ensure that all teachers have the tools they need to integrate ICT into their teaching, thereby enhancing the quality of education for students. A consistent theme in the responses was the difficulty in accessing necessary ICT tools. Participants from a community campus mentioned that when resources like projectors and stable internet were unavailable, they were forced to rely on traditional teaching methods, which were less engaging for students. This was also reflected in Participant 6's response, where the lack of consistent access to smart boards and stable internet led to feelings of frustration and a reduced desire to integrate ICT. Despite the challenges, many teachers recognized the potential benefits of ICT in enhancing student engagement and understanding. While teachers at Tribhuvan University are generally motivated to incorporate ICT into their teaching practices, the availability of resources remains a significant barrier. The varying levels of resource access are seen as both a source of motivation and a point of frustration, depending on the availability and quality of the resources at hand. So, this study suggested that university administrators formulate targeted policy interventions to ensure equitable access to resources and enhance ICT integration across all departments, improving both teaching effectiveness and student engagement.

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