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University Faculty Members' Readiness for Digital Education: ICT Self-Efficacy and Open Educational Resources Integration in Odisha

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Abstract

The integration of Information and Communication Technology (ICT) in higher education has significantly transformed teaching methodologies, with Open Educational Resources (OERs) emerging as key components in digital learning. This study investigates the ICT self-efficacy of university faculty members in Odisha, India, regarding their general ICT knowledge, advanced ICT proficiency, and their competence in preparing OERs. A survey design was adopted, utilizing a self-developed Technological Self-Efficacy Scale to collect data from 168 faculty members across five state public universities. The study found that faculty members exhibit high self-efficacy in general ICT tasks such as downloading files, accessing online resources, and using office software, with mean scores ranging from 2.69 to 2.95. However, moderate proficiency was observed in advanced ICT tasks, particularly in multimedia content creation and website/blog management (mean scores between 2.31 and 2.53). Furthermore, ICT self-efficacy related to OER preparation varied, with strong confidence in recommending and sharing OER (mean = 2.64) but lower proficiency in creating rubrics and uploading materials to collaborative platforms (mean = 2.18 and 2.30, respectively). The findings highlight the need for targeted faculty development programs focusing on multimedia tools, digital security, and OER content creation. Strengthening faculty training initiatives can enhance the effective integration of ICT and OERs in university teaching practices, ultimately improving digital pedagogy and resource accessibility.

Keywords: ICT Self-Efficacy, Open Educational Resources, University Faculty, Digital Pedagogy, Higher Education

1. Introduction

The rapid advancement of Information and Communication Technology (ICT) has revolutionized the educational landscape, particularly in higher education. Open Educational Resources (OERs) have emerged as a vital component of digital learning, enabling the free exchange of knowledge and fostering collaborative teaching practices. OERs provide faculty members with access to high-quality educational content, reducing dependency on traditional textbooks and promoting innovative pedagogical strategies. However, the successful integration of OERs into university teaching depends largely on faculty members' ICT self-efficacy, which encompasses their confidence and ability to effectively utilize digital tools and platforms. OERs requires a solid and in-depth understanding of Information and

Communication Technology (ICT), as it enables teachers and students to design, share, and collaborate on educational materials flawlessly. Knowledge of ICT empowers teachers to use various digital tools and platforms for the creation, management and distribution of OERs to make learning more inclusive accessible and adaptable. OERs are freely available and customizable materials that requires enhanced ICT skills of teachers for making high quality resources accessible to diverse learners on different contexts. So, ICT proficiency is not just a technical requirement, but a critical enabler for the successful creation and use of OERs in modern education society. In 21st century, ICT is well-established and widely integrated with new technologies for improving the quality of teaching and students learning outcomes by making it flexible, interactive and accessible (Lawrence & Tar, 2018). An efficient and vast knowledge in ICT is today's demand which will make the teaching learning process in tune with 21st century. Teachers' efficient knowledge on ICT plays an important role in preparation and sharing of OERs. The term self-efficacy was coined by Bandura. The term self-efficacy was defined as the confidence in teacher required to integrate ICT in teaching learning practices (Sabic et al., 2021). Teachers' attitude, self-efficacy and skills in using technology plays a vital role in bringing quality in education (Clipa et al., 2023). By the effective use of ICT students' engagement and understanding will deeper through inquiry-based learning approach. But the challenge is teachers' confidence in using ICT and support provided by organisation (Yonezawa T and Nakai Y, 2024). General ICT self-efficacy is essential for building teachers' confidence and skills needed to effectively integrate ICT into their educational practices and enhance the use of ICT in teaching and learning process (Hatlevik and Hatlevik, 2018).

ICT self-efficacy plays a critical role in determining the extent to which faculty members engage with technology in their instructional practices. Faculty members with higher ICT self-efficacy are more likely to explore and adopt OERs, integrate digital resources into their curricula, and contribute to the development of open educational materials. Conversely, those with lower self-efficacy may struggle with technological challenges, limiting their participation in digital education initiatives. Prior studies have highlighted the importance of assessing faculty members' technological competencies to identify gaps and develop targeted training programs that enhance digital literacy and resource utilization. This study aims to explore the technological self-efficacy of university faculty members in Odisha, India, focusing on three dimensions: general ICT knowledge, advanced ICT proficiency, and ICT self-efficacy related to OER preparation. By examining faculty members' confidence levels in various ICT tasks, this research seeks to provide insights into the current state of digital competencies among educators and identify areas that require further capacity building. The findings of this study can inform institutional policies and professional development programs aimed at strengthening faculty engagement with OERs and fostering a more technology-integrated higher education system.

2. Reviews of Related Study

The use of Information and Communication Technology (ICT) in higher education has become increasingly prevalent in recent years. Faculty members play a crucial role in the adoption and implementation of ICT tools, including Open Educational Resources (OERs). Understanding the self-efficacy of university faculty members towards the use of OERs is essential for promoting their effective integration into teaching practices. Several studies have explored various aspects related to faculty members' attitudes, perceptions, and readiness towards ICT and OERs. The Xanadu Project conducted

by (Trentin, 2006) aimed to analyze the challenges faced by faculty members in using ICT for university teaching. The project highlighted the importance of training models to address misconceptions and promote networked collaborative interactions over distributive ICT use. Similarly, (Panda et. al., 2017) examined the perception of faculty members at the Indira Gandhi National Open University in India towards openness and sharing of resources, emphasizing the need for training on intellectual property rights and the creation and use of OERs. (Rizvi et. al., 2017) conducted a pilot study to identify barriers influencing the adoption of technology for teaching and learning among faculty members in a private university in Pakistan and East Africa. The study emphasized the importance of understanding faculty perceptions to overcome barriers to technology integration. (Budu et. al., 2018)investigated the impact of self-efficacy on E-learning systems' usage among faculty members in tertiary education institutions in Ghana, highlighting the significance of incorporating self-efficacy into the Technology Acceptance Model (TAM). Moreover, (Martin et. al., 2020) conducted a phenomenological study to explore faculty members' lived experiences with choosing Open Educational Resources (OERs) at a high-research-activity university in the U.S. The study aimed to bridge the gap between attitudes and practices towards OER adoption and creation. (Alotaibi et. al., 2021) assessed faculty members' readiness to use an e-learning platform at Shaqra University, emphasizing the importance of self-efficacy in using information and communications technology for effective e-learning. Furthermore, (Munyengabe et. al., 2021) compared the use of Information and Communication Technology (ICT) tools among university faculties in East Africa and China, highlighting the importance of understanding instructors' perceptions and attitudes towards technology applications. The study emphasized the need for effective technology integration strategies in higher education institutions. In conclusion, the literature review highlights the importance of understanding faculty members' self-efficacy towards the use of OERs and ICT in higher education. Studies have emphasized the significance of training, addressing misconceptions, and promoting collaborative interactions to enhance faculty members' readiness and attitudes towards technology integration. Future research should focus on developing effective strategies to support faculty members in utilizing OERs and ICT tools for teaching and learning in university settings.

3. Significance of the study

ICT provides a platform where teacher can enhance their teaching effectiveness by getting a wealth of resources, tools and platforms to work in collaboration with others. Teacher's self-efficacy is an important factor in integrating technology in classroom teaching (Clipa et al. 2023). Hatlevik and Hatlevik (2018) highlighted that teachers' self-efficacy is required to make teachers work a master piece. Data collected from 1158 teachers to found teachers self-efficacy for using ICT in their teaching practice in association with their ICT used in teaching and their general ICT self-efficacy. The findings revealed that general ICT self-efficacy is necessary for developing ICT self-efficacy for educational purposes.

The presence of ICT is become a major challenge for teachers in creating an effective teaching learning scenario. Omar and Noor (2021) revealed that there is no significant difference between the age and gender of teachers on self-efficacy of teachers on ICT use. Development of teachers' self-efficacy on ICT depends on principal major role as a true technology leader. Kundu et.al. (2021) revealed perception of self-efficacy and infrastructure were significant predictors of the teachers ease in using ICT. Afari et. al. (2023) found that basic technology skills and advanced technology skills mediate the relationship between the traditional use of technology and technology for pedagogy.

Involvement of ICT by teachers in their teaching makes students active. Afari et.al. (2023) explored the association between computer self-efficacy and pre-service teachers' intentions to use technology. Data collected from 267 students. The analysis concluded that basic and advanced technology skills mediate the relationship between technology for pedagogy and the traditional use of technology. ICT integration in the teaching and learning process enhanced the caliber of instructors' instruction (Tayaban, 2022). There is hardly any research found which relates ICT with OER. So, the researcher intended to study the ICT self-efficacy of faculties on preparation of OERs.

4. Objectives

1. To assess the general ICT self-efficacy of university faculty members in Odisha.
2. To examine faculty members' proficiency in advanced ICT tasks.
3. To examine faculty members' ICT self-efficacy related to the preparation and use of Open Educational Resources (OERs).

5. Methodology

In the present study, a survey design was essential as it allowed the collection of data from a large group of participants, ensuring diverse viewpoints were captured. It facilitated understanding faculty awareness, attitudes, and practices regarding Open Educational Resources (OER), enabling statistical analysis to identify trends and ensure generalizability of findings. The population of the present study consists of all faculty members of 14 state public universities of Odisha. From which, the investigator was purposively selected 5 old universities of Odisha i.e., Utkal University, Ravenshaw University, Berhampur University, Sambalpur University and G.M University zonal wise. From the sample universities data were collected from total 168 faculties from Arts, Science, Commerce and other departments adopting convenient sampling techniques. The investigator used self-made Technological Self-Efficacy Scale. This scale divided into 3 dimensions such as **A**. General Technological Self Efficacy, **B**. Advanced Technological Self Efficacy, **C**. ICT Self Efficacy Related to OER consisting of 8, 8 and 18 items respectively. The purpose of dividing the scale into 3 dimensions was to know the technological efficiency of faculty members in the light of General ICT knowledge, Advanced ICT knowledge and ICT knowledge in preparation of OER. The data were collected both in online (using Kobo toolbox) and physical mode (personally visiting to university faculties). A simple percentage and descriptive statistics is used for data analysis.

6. Results

6.1 Participant of the study

The table 1. Characteristics of the participants

Variables		N	Percentage
Gender	Male	109	64.88 %
	Female	59	35.12 %
Nature of Job	Part Time	23	13.69 %
	Regular	145	86.31 %
Stream	Arts	101	60.12 %
	Science	51	30.36 %

	Commerce	16	9.52 %
Teaching Experience	High Teaching Exp.	62	36.90 %
	Medium Teaching Exp.	44	26.19 %
	Low Teaching Exp.	62	36.90 %

Table 1 shows the characteristics of the participants, highlighting key demographic and professional details. The majority of participants were male (64.88%), while females accounted for 35.12%. Most participants (86.31%) held regular teaching positions, with only 13.69% working part-time. Regarding academic streams, 60.12% belonged to Arts, 30.36% to Science, and 9.52% to Commerce. Participants' teaching experience was evenly distributed, with both high and low teaching experience groups representing 36.90% each, while 26.19% had medium teaching experience. Overall, the sample reflects diversity in gender, job nature, academic backgrounds, and teaching experience levels.

6.2 General technical efficiency of university faculty members.

Table 2. General technical efficiency of university faculty members.

Sl No.	ITEMS	FC	PC	LC	M	SD
1.	I can use my laptop or mobile device to download files and figures from the internet.	149(89%)	17(10%)	2 (1%)	2.87	0.36
2.	I can use laptops and mobile devices to access the website via Wi-Fi or the internet.	160(95%)	8(5%)	0	2.95	0.21
3.	The word document can be converted to a PDF, and vice versa.	152(91%)	14(8%)	2(1%)	2.89	0.35
4.	I can use a scanner and printer to print the documents I need.	153(91%)	13(8%)	2(1%)	2.90	0.34
5.	I am able to move data from pen drives, iPhones, iPads, and Gmail to my computer.	150(89%)	14(8%)	4(3%)	2.87	0.40
6.	On the social media platforms that I use the most, such as Facebook, Instagram, WhatsApp, Skype, Instagram, and Twitter, I can quickly ban or restrict anyone.	125(75%)	34(20%)	9(5%)	2.69	0.57
7.	I can easily change password of my email/social networking account and receive spams through E-mail or posted on my wall on Social Networking sites i.e. Facebook or others.	133(79%)	29(17%)	6(4%)	2.75	0.51
8.	If I forget the password of my email/social networking account, I can	128(76%)	34(20%)	6(4%)	2.73	0.52

	easily recover it.

Note: FC: Fully Competent; PC: Partially Competent; LC: Less Competent; M: Mean; SD: Standard Deviation

The table 2 shows the self-reported percentage, mean and Standard deviation of General technical efficiency of university faculty members across several tasks. A majority (89%) of faculty members reported being fully confident in downloading files and figures, while 10% were partially confident and only 1% lacked confidence with mean score of 2.87 and SD = 0.36 indicates a high level of technical efficiency in this aspect. Highest majority 95% of faculties fully confident on accessing websites via wi-fi/internet and only 5% partially confident. No respondents lacked confidence with mean score of 2.95 and SD = 0.21 suggests this is a well-mastered skill among faculty members. A strong majority (91%) indicated full confidence on converting word documents to pdfs and vice versa, 8% partial confidence, and only 1% lacked confidence with mean score of 2.89 and SD = 0.35 confirms proficiency in this task. Similar to document conversion, majority of faculty (91%) expressed full confidence on using scanner and printer, 8% partial confidence, and 1% lacked confidence with mean score of 2.90 and SD = 0.34 supports a high efficiency level in using scanning and printing tools. While 89% reported full confidence on transferring data between devices, a slightly higher proportion (3%) lacked confidence compared to other basic technical tasks with mean score of 2.87 and SD = 0.40 still suggests a strong capability but with minor variations in confidence levels. A relatively lower percentage (75%) reported full confidence on managing social media restrictions, with 20% partially confident and 5% lacking confidence. The mean score of 2.69 and SD = 0.57 indicates moderate efficiency, suggesting some faculty members may need further training or familiarity with social media controls. A majority (79%) were fully confident on changing email/social media passwords and managing spam, 17% partially confident, and 4% lacked confidence with mean score of 2.75 and SD = 0.51 indicates moderate to high efficiency, though some faculty may need further guidance on email security practices. Majority (76%) of faculty were fully confident on recovering forgotten passwords for email/social-media, while 20% were partially confident, and 4% lacked confidence with a mean score of 2.73 (SD = 0.52), this skill is slightly less mastered compared to basic document handling but still reflects a reasonable level of technical self-sufficiency.

6.3 Advanced ICT Self Efficacy

Table 3 Advanced ICT Self Efficacy

Sl No.	ITEMS	FC	PC	LC	M	SD
1.	I can use Microsoft office programs i.e. word, excel, power point for the preparation of OER	136(81%)	26(15%)	6(4%)	2.77	0.50
2.	I can edit text online containing internet links and images.	101(60%)	55(33%)	12 (7%)	2.53	0.63
3.	I can calculate and record assessment, marks and grades of students.	129(77%)	31(18%)	8 (5%)	2.72	0.54

4.	I can create a presentation with simple animation function (use of animated video clips to explain complex concepts like cutting solid figure, calculating area of complex figures).	103(61%)	52(31%)	13(8%)	2.53	0.64
5.	I can participate in discussion forum on the internet using Google Meet, Zoom, Microsoft team, Teach-mint etc.	148(88%)	19(11%)	1(1%)	2.87	0.35
6.	I can create and maintain my blogs or website.	80(48%)	61(36%)	27(16%)	2.31	0.73
7.	Download and install software and apps on a computer/laptop/mobile.	128(76%)	35(21%)	5(3%)	2.73	0.51
8.	I am able to manage files through creating folders, moving and renaming files and install Anti-virus software in my laptop for protecting it from virus.	124(74%)	33(20%)	11(6%)	2.67	0.59

Note: FC: Fully Competent; PC: Partially Competent; LC: Less Competent; M: Mean; SD: Standard Deviation

The table 3 shows the self-reported percentage, mean and Standard deviation of Advanced ICT Self Efficacy of university faculty members across several tasks.A strong majority (81%) expressed full confidence on using Microsoft office programs (word, excel, PowerPoint) for oer preparation, while 15% were partially confident (PC) and 4% lacked confidence (LC) with mean score of 2.77 and SD = 0.50 indicates high self-efficacy in using MS Office for open educational resources (OER) preparation. A lower proportion (60%) reported full confidence on editing online text with internet links and images, while a significant percentage (33%) were only partially confident, and 7% lacked confidence with mean score of 2.53 and SD = 0.63 suggests moderate proficiency, with room for improvement in online text editing skills. A high proportion (77%) of faculty members reported full confidence on calculating and recording student assessment, marks, and grades, while 18% were partially confident, and 5% lacked confidence with mean score of 2.72 and SD = 0.54 indicates a strong ability to manage student assessments digitally. About 61% were fully confident on creating presentations with simple animations (including animated video clips for teaching, 31% were partially confident, and 8% lacked confidence with mean score of 2.53 and SD = 0.64 suggests moderate efficiency, indicating that some faculty members may require additional training in multimedia-enhanced teaching techniques. The highest confidence level among all items, with 88% fully confident on participating in online discussion forums (google meet, zoom, Microsoft teams, teachmint, etc., 11% partially confident, and only 1% lacking confidence with mean score of 2.87 and SD = 0.35 suggests that faculty members are very comfortable with online discussions and virtual meetings. The lowest confidence level among all items, with only 48% fully confident on creating and maintaining blogs or websites, 36% partially confident, and 16%

lacking confidence with mean score of 2.31 and SD = 0.73 suggests that many faculty members find website and blog creation challenging, indicating a need for training in digital content creation. About 76% were fully confidenton downloading and installing software/apps on different devices, 21% were partially confident, and 3% lacked confidence with mean score of 2.73 and SD = 0.51 reflects a high level of self-efficacy in installing software and apps, an essential ICT skill. A majority (74%) were fully confident on managing files (creating folders, moving/renaming files) and installing antivirus software, 20% were partially confident, and 6% lacked confidence with mean score of 2.67 and SD = 0.59 indicates strong proficiency in file management and basic cybersecurity practices.

6.4 ICT Self Efficacy related to preparation of OER

Table 4. ICT Self Efficacy related to preparation of OER

Sl No.	ITEMS	FC	PC	LC	M	SD
1.	I can prepare technology based educational activities on computer based on OER.	97(58%)	55(33%)	16(9%)	2.48	0.66
2.	I can prepare appropriate materials of OER for students use and share those educational resources to students, colleagues and others.	107(64%)	48(28%)	13(8%)	2.56	0.63
3.	When I need it, I can recommend reliable websites of OER related to my topic to my students and suggest for preparation and sharing of OER.	116(69%)	43(26%)	9(5%)	2.64	0.58
4.	Co-operate to teachers of different fields in planning and preparing OER.	102(61%)	55(33%)	11(6%)	2.54	0.62
5.	When needed, I can make and modify PowerPoint slides and PDF.	123(73%)	40(24%)	5(3%)	2.70	0.52
6.	I can upload the materials in Wikipedia for easy access to students.	81(48%)	56(33%)	31(19%)	2.30	0.76
7.	I can prepare OER rubrics.	77(46%)	44(26%)	47(28%)	2.18	0.84
8.	I use image and text files from the OER.	93(56%)	54(32%)	21(12%)	2.43	0.70
9.	I can use graphics and data tables or sheets from the OER.	91(54%)	52(31%)	25(15%)	2.39	0.73
10.	I can use audio and video files from the OER.	91(54%)	55(33%)	22(13%)	2.41	0.71
11.	I use presentation or demonstration	91(54%)	56(33%)	21(12%)	2.42	0.70

	files from the OER.					
12.	I can share information with students by creating online groups.	118(71%)	39(23%)	11(6%)	2.64	0.60
13.	I am able to create a discussion form for the students.	104(62%)	42(25%)	22(13%)	2.48	0.72
14.	I can find appropriate OERs from various websites as per my requirement.	100(60%)	56(33%)	12(7%)	2.52	0.63
15.	I use online activities such as quizzes and assignments to keep the students interested.	100(60%)	55(33%)	13(7%)	2.52	0.64
16.	I can create educational videos and upload it in YouTube.	74(44%)	58(35%)	36(21%)	2.23	0.78
17.	I am able to use multimedia applications to prepare educational videos.	80(48%)	52(31%)	36(21%)	2.26	0.79
18.	I can use OER to obtain full courses for educational purposes.	90(54%)	64(38%)	14(8%)	2.45	0.64

Note: FC: Fully Competent; PC: Partially Competent; LC: Less Competent; M: Mean; SD: Standard Deviation

The table 4 shows the self-reported percentage, mean and Standard deviation of ICT Self Efficacy related to preparation of OER of university faculty members across several tasks.A majority (58%) of respondents reported being fully confident on prepare technology-based educational activities on a computer based on OER., while 33% were partially confident. However, 9% lacked confidence with mean score 2.48 and SD 0.66 indicate most faculty members feel capable of integrating technology into education using OER, a small portion still requires support in designing effective technology-based learning activities. 64% of respondents expressed full confidence on prepare appropriate materials of OER for student use and share those with students, colleagues, and others, with 28% partially confident and 8% lacking confidence with mean score 2.56 and SD 0.63 indicate a high level of self-efficacy is observed in the ability to create and distribute OER, reflecting active engagement in open education practices. 69% were fully confident on recommend reliable websites of OER related to my topic to my students and suggest the preparation and sharing of OER, 26% partially confident, and 5% lacked confidence with mean score 2.64 and SD 0.58 indicate faculty members have strong competence in identifying and recommending OER sources, indicating goodawareness and knowledge of OER repositories. 61% reported full confidence on cooperate with teachers of different fields in planning and preparing OER, 33% partial confidence, and 6% lacked confidence with mean score 2.54 and SD 0.62 shows collaboration across disciplines in OER development is relatively high, but some faculty members may need structured training in interdisciplinary resource development. 73% were fully confident on make and modify PowerPoint slides and PDFs when needed, 24% partially confident, and only 3% lacked confidence with mean score 2.70 and SD 0.52 indicating that faculty members are well-versed in creating and modifying digital presentations and documents. 48% were fully confident on upload

materials to Wikipedia for easy access to students, 33% partially confident, and 19% lacked confidence with mean score 2.30 and SD 0.76 compared to other aspects of OER preparation, Wikipedia contribution appears to be a challenge for many faculty members, possibly due to lack of familiarity with Wikipedia's content submission policies. 46% reported full confidence on prepare OER rubrics, 26% partial confidence, and 28% lacked confidence with mean score 2.18 and SD 0.84 shows the lowest-rated skill, suggesting a need for capacity building in designing assessment criteria for OER-based learning materials. 56% were fully confident on using image and text files from OER, 32% partially confident, and 12% lacked confidence with mean score 2.43 and SD 0.70 shows over half of the respondents are confident in utilizing image and text resources, some faculty members may benefit from training in optimizing and properly citing OER-based media. 54% were fully confident on use graphics and data tables or sheets from OER, 31% partially confident, and 15% lacked confidence with mean score 2.39 and SD 0.73 indicate confidence is slightly lower in working with data-related content, indicating a possible need for training in data visualization and statistical representation using OER resources. 54% were fully confident on use audio and video files from OER, 33% partially confident, and 13% lacked confidence with score 2.41 and SD 0.71 indicate faculty members show moderate confidence in multimedia usage, but some may require training in editing and embedding audio-visual OER materials into their teaching. 54% were fully confident on use presentation or demonstration files from OER, 33% partially confident, and 12% lacked confidence with mean 2.42 and SD 0.70 suggest his aligns with the moderate confidence in using multimedia resources, suggesting a need for structured guidance on integrating OER-based interactive presentations. 71% were reported fully confident on share information with students by creating online groups, 23% partially confident, and 6% lacked confidence with mean 2.64 and SD 0.60 shows faculty members demonstrate strong competence in online collaboration, which is essential for enhancing digital learning communities. 62% were fully confident to create a discussion forum for students, 25% partially confident, and 13% lacked confidence with mean 2.48 and SD 0.72 shows majority are comfortable with online discussions, a segment of respondents requires additional training in discussion board management and facilitation techniques. 60% reported full confidence on finding appropriate OER from various websites as per my requirement, 33% partial confidence, and 7% lacked confidence with mean 2.52 and SD 0.63 indicates a high level of awareness in sourcing relevant OER, though some faculty members may need guidance on identifying and evaluating high-quality OERs. 60% were fully confident on using online activities such as quizzes and assignments to keep students interested, 33% partially confident, and 7% lacked confidence with mean 2.52 and SD 0.64 indicate confidence is relatively high, but some faculty members may require additional skills in designing interactive and engaging OER-based learning activities. 44% were fully confident on creating educational videos and upload them on YouTube, 35% partially confident, and 21% lacked confidence with mean 2.23 and 0.78 indicate a significant proportion of faculty members require training in video production and content sharing on YouTube, a key area for enhancing digital learning engagement. 48% were fully confident on able to use multimedia applications to prepare educational videos, 31% partially confident, and 21% lacked confidence with mean 2.26 and SD 0.79 indicate faculty members show limited confidence in using multimedia applications, indicating a need for practical training in video editing and production tools. 54% were fully confident on use OER to obtain full courses for educational purposes, 38% partially confident, and 8% lacked confidence with mean 2.45 and 0.64 indicate faculty members show moderate confidence in accessing and utilizing full courses from OER repositories, but awareness of structured OER courses needs enhancement.

7. Discussion

The findings of this study provide valuable insights into university faculty members' self-efficacy in using ICT tools, particularly in relation to Open Educational Resources (OERs). The discussion is structured around three key aspects: general ICT self-efficacy, advanced ICT self-efficacy, and ICT self-efficacy related to OER preparation. The results highlight areas of proficiency as well as challenges that faculty members face in integrating ICT and OERs into their teaching practices.

7.1 General ICT Self-Efficacy

Faculty members demonstrated high confidence in fundamental ICT tasks, with the majority reporting full proficiency in basic technical operations such as downloading files (89%), accessing websites via Wi-Fi (95%), converting Word documents to PDFs (91%), and using scanning and printing tools (91%). These findings align with previous research (Budu et al., 2018) indicating that self-efficacy in basic ICT skills significantly impacts educators' readiness to adopt digital tools. The mean scores for these tasks (ranging from 2.87 to 2.95) suggest that general ICT competencies are well established among faculty members, supporting their ability to engage with OERs effectively.

However, moderate confidence levels were observed in areas related to digital security and social media management. Only 75% of respondents expressed full confidence in managing social media restrictions, with a lower mean score of 2.69 (SD = 0.57), while password recovery and spam management had mean scores of 2.73 (SD = 0.52) and 2.75 (SD = 0.51), respectively. These findings are consistent with Rizvi et al. (2017), who found that concerns about cybersecurity and privacy can hinder faculty members' engagement with online educational platforms. Addressing these gaps through targeted training programs could enhance digital self-sufficiency among faculty members.

7.2 Advanced ICT Self-Efficacy

The study also assessed faculty members' confidence in performing advanced ICT tasks, particularly those relevant to OER preparation. Faculty members exhibited strong self-efficacy in using Microsoft Office programs for OER development (81% fully confident, mean = 2.77, SD = 0.50) and managing student assessments digitally (77% fully confident, mean = 2.72, SD = 0.54). These results align with Munyengabe et al. (2021), who emphasized the role of office productivity tools in effective technology integration in higher education.

However, the study revealed moderate to low confidence in certain advanced digital skills, particularly in content creation and multimedia integration. Only 60% of faculty members reported full confidence in editing online text with embedded links and images, and 61% felt confident in creating presentations with animations. Even lower levels of confidence were observed in website/blog creation (48% fully confident, mean = 2.31, SD = 0.73), which was the lowest-rated skill among all advanced ICT tasks. These findings echo Martin et al. (2020), who found that despite positive attitudes towards OER, faculty members often struggle with the technical aspects of digital content creation. This suggests a pressing need for professional development programs focused on multimedia skills and web-based content creation to bridge these gaps.

7.3 ICT Self-Efficacy in OER Preparation

When it comes to ICT self-efficacy in preparing OERs, faculty members reported mixed levels of confidence. While a significant proportion of respondents expressed confidence in preparing OER-based educational activities (58%) and recommending reliable OER websites (69%), fewer felt confident in more complex aspects such as contributing to Wikipedia (48%) or preparing OER rubrics (46%). The lowest-rated skill in this category was preparing OER rubrics, with a mean score of 2.18 (SD = 0.84), indicating that many faculty members lack the necessary skills for designing assessment frameworks for OER-based learning.

Moreover, faculty members showed moderate confidence in using multimedia elements within OER, such as graphics, data tables, and audio-visual materials. The mean scores for these tasks ranged from 2.39 to 2.45, suggesting that while there is some familiarity, additional support is needed to strengthen their multimedia competencies. These findings support the conclusions of Alotaibi et al. (2021), who noted that faculty members' self-efficacy in ICT-based teaching is a key determinant in their ability to effectively utilize OERs.

The study also found that faculty members exhibit a high level of self-efficacy in using collaborative digital tools. About 71% were fully confident in sharing information with students through online groups, and 62% felt confident in creating discussion forums. This is in line with Trentin (2006), who emphasized the importance of fostering networked collaborative interactions to promote the effective use of ICT in higher education. Encouraging faculty members to engage in collaborative OER development may further enhance their digital competencies and confidence.

8. Implications and Recommendations

The findings of this study suggest several key recommendations for enhancing faculty ICT self-efficacy and promoting the effective use of OERs:

i. **Targeted Training Programs:** Institutions should implement focused workshops and training sessions on advanced ICT skills, particularly in content creation, multimedia integration, and OER rubric development (Panda et al., 2017).
ii. **Technical Support and Resources:** Providing easy access to technical support teams and digital resource centers can help faculty members navigate challenges related to OER preparation and use (Martin et al., 2020).
iii. **Enhancing Digital Security Awareness:** Workshops on cybersecurity, password management, and social media security protocols should be introduced to strengthen faculty confidence in managing digital risks (Rizvi et al., 2017).
iv. **Encouraging Interdisciplinary Collaboration:** Faculty members should be encouraged to collaborate across disciplines in developing and utilizing OERs, leveraging diverse expertise to create high-quality educational resources (Munyengabe et al., 2021).
v. **Promoting Institutional Policies on OER Adoption:** University policies should emphasize the integration of OERs into the curriculum and provide incentives for faculty engagement in OER initiatives(Alotaibi et al., 2021).

9. Conclusion

The study underscores the critical role of ICT self-efficacy in the adoption and effective use of OERs among university faculty members. While faculty members demonstrated strong proficiency in basic ICT operations and digital collaboration, notable gaps were identified in advanced ICT tasks such as multimedia content creation and online resource development. These findings align with existing literature that emphasizes the necessity of continuous professional development and structured training programs to enhance faculty digital competencies. The study suggests that universities should implement targeted workshops, provide access to digital resource centers, and establish institutional policies that encourage OER integration in teaching. Enhancing faculty self-efficacy in ICT and OER utilization can lead to greater engagement with open educational practices, fostering a more inclusive and innovative academic environment. Future research should explore the impact of long-term ICT training interventions on faculty performance and student learning outcomes in digital education environments.

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