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Digital in Higher Education in Burundi

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Abstract

This article aims to analyze the role of the digital and e-learning systems in higher education in Burundi. In this article, we used a semi-structured interview in which we got four interviewers who did with 343 students (ladies and gentlemen) from different universities in Burundi from public and private sectors and from various cities in Burundi. Results were recorded with Kobo collect and analyzed with IBM SPSS and Microsoft Office Excel. Findings show at an average of only 16.3% of our respondents confirm that there are ICT services in higher education institutions in Burundi. Students are obliged to be physically in front of registrars and teachers and this is a rule as it is attested by an average of 88.9% of our respondents. 89.5% of our interviewees as students do not have access to computer equipment and internet while 95.6% of our interviewees as students do not have access to ICT tools. 97.7% of our respondents do not know what is E-learning and deny its existence at different institutions of higher education I whether private or public in Burundi. In consequence, lack of e-learning and digitalization by ICT technology in higher education in Burundi is a cause that 96.6% of our interviewees who are not satisfied.

Keywords

Digitalization, E-Learning System, Higher Education, Burundian Education, ICT-Led Education

1. Introduction

Digital technology can help promote sustainable education worldwide. Digital

advances can support and accelerate the achievement of the Sustainable Development Goals, from ending extreme poverty (Buhendwa et al., 2023) and reducing maternal and child mortality (Sindayigaya, 2023b: pp. 824-825; Sindayigaya, 2023a: pp. 52-53) to promoting sustainable agriculture and decent work (Jonya et al., 2023: pp. 447-448), and achieving universal literacy (Betton et Pondaven, 2021: pp. 116-118; Endrizzi, 2012; Leroux et al., 2017: pp. 433-435). Digital system helps increasing the capacity of judicial system (Ciza et Sindayigaya, 2023; Niyongabo et Sindayigaya, 2023; Sindayigaya et Hitimana, 2016; Sindayigaya et Nyabenda, 2022).

Higher education is a pivotal moment in a person's life. They mark the transition to a future career. Here, we meet young students, just out of high school. Sometimes you also meet older adults who are retraining for a new career. All these students follow courses of varying lengths, public or private, professional or academic. After all, there is a huge range of higher education courses that welcome extremely heterogeneous public students from different educational and social backgrounds. Their needs are therefore particularly diverse. Students need to learn the fundamentals of a profession but also acquire the skills essential to their professional lives and this in an academic and professional world undergoes profound change (Day et Gu, 2010: pp. 229-231; Greenhaus et al., 2009: pp. 422-424; Sullivan et al., 2007: pp. 119-222).

Digital technology plays a fundamental role in transforming our daily and professional environment. It therefore has an equally central place in higher education. Universities, schools and training centers all have one objective: to promote the success of their students, by offering them quality training (Mœglin, 2022). Digital tools are an excellent way of making this training effective, specialized and attractive (Charlier, 2011: p. 29; Poteaux, 2013) and ICT is a sine qua non in today's for in the style of E-learning, it enables learners who want to stay at home, to use their free time to continue learning and develop professionally (Mbonihankuye, 2020).

To keep up with the pace of the world, students in higher education should also have computer equipment to help them in their academic research. These include laptops, tablets and/or smartphones, and internet access to facilitate research. However, given the country's socio-economic context (Toyi et Sindayigaya, 2023: pp. 218-219), Burundian students are obliged to follow the academic curriculum in a face-to-face teaching environment (Kombo et al., 2023; Nduwimana et Sindayigaya, 2023a: pp. 13-15; 2023b: pp. 148-149). Distance learning, on the other hand, provides training in asynchronous time and place and learners no longer need to travel or adhere to timetables helping a learner to do so wherever and whenever (Öztürk, 2021: pp. 173-174). All you need is a WI-FI connection and a laptop, tablet or smartphone. Anyway, digital tools are essential for educational transformation.

Digital technology is a powerful factor, a catalyst, for initiating a transformation process and today, it seems essential and dynamic, in phase with the evolu-

tion of social practices, particularly those of students (Douzet, 2021). Through its potential, it contributes to the growing interest in the quality of teaching even though it is not in itself a guarantor of pedagogical innovation (Annoot, 2020). The introduction of digital technologies into training systems can sometimes reinforce traditional models, such as the lecture "renovated" by a slide show but digital technology also encourages new forms of learning, and contributes to the promotion of student-centered pedagogical models (Valerie et al., 2017). It opens up new possibilities for the organization of learning paths and the flexibility of learning time and space likewise it authorizes new modes of interaction between key-players (students, teachers, other stakeholders), transforming their respective roles within "learning communities". It provides unlimited access to countless training resources for it enables all learners to build their own personal learning environment (Ndericimpaye et Sindayigaya, 2023). Digital technology is at the heart of pedagogical transformation and is a lever for it (Lemaître, 2015). This is a cross-cutting dimension that can be found in each of the development areas, but which also needs to be addressed specifically, in particular with regard to:

- ⇨ The organizational, economic and practical aspects of distance learning;
- ⇨ Particular attention should be paid to the impact of the MOOC (Massive Open Online Course) phenomenon on the training mission of establishments (practices of players, supply of resources, certification, schooling);
- ⇨ The provision of resources for student training, with particular reference to the articulation of digital spaces and libraries, and the issue of learning centers;
- ⇨ The digital and informational skills students need to build and manage their Personal Learning Environment (PLE);
- ⇨ Monitoring emerging technologies and their future uses, which may lead to new teaching practices.

There is strong social awareness and pressure on the need to use digital technology, especially in higher education. A policy needs to be put in place to define guidelines, remove obstacles, as presented above, and support stakeholders ("Pedagogical and digital innovation at the heart of teaching", 2021). Transforming manual activities into digital requires an effort from all players in the society, an effort that cannot be undertaken without a shared understanding of the issues and objectives through a global policy relayed by school policies (Timotheou et al., 2023). This transformation requires the commitment of teachers and teaching teams, which cannot be achieved without the support and recognition of the training mission in a professional way.

The will to develop digital technology in higher education is clearly affirmed in Burundi higher education policies and the Ministry in charge of education carries this ambition forward, to outline perspectives, define priorities and create the conditions favorable to its realization (Kwizera, 2019). This activity should be translated into clearly stated objectives, which could be:

1) Improve digital quality for success in higher education in Burundi;

2) Evolve digital teaching and administration to meet the missions of higher education, and bring them into line with the various stakeholders and new needs;

3) Place the training mission at the heart of institutional policies, with a rebalancing in relation to research;

4) Professionalize players to ensure digital quality (Havyarimana, 2022).

It is therefore important that innovation for good digital quality is recognized in the policies of higher education establishments in Burundi, notably through the accreditation procedure, as an important factor in evolution. Innovation funds for digital success, which some establishments have not yet set up, with calls for projects and valorization days, are particularly interesting initiatives in this respect.

This article aims to analyze how higher education in Burundi conceives e-learning and ICT-led methods in their system of working through services favorite to students.

2. Methodology

For the purpose of data collection we organized questionnaire consisting of open-ended questions set by a semi-structured interview with 343 students in different universities. We recruited 4 interviewers to proceed to the survey following the questions established and written in the tool of Kobo-Collect. It was consigned that the interviews might be conducted in an atmosphere of trust and good cooperation. Finally, to use the language best understood by the interviewee, the interviews were conducted in French. To collect the data, interviewers used voice-recorders. Afterward, we proceeded with the transcription with Microsoft Word.

For data processing and analysis, we used Microsoft Excel, and IBM SPSS 25.

We used Zotero tool referencing throughout this research.

Interview Design

Specific questions were asked during the interview. These were to inquire the interviewees' opinions about ICT service existence in different universities in Burundi, students' administrative registration procedure, student's access to sufficient computer equipment and the Internet, students' access to ICT tools, Existence of E-learning program, and their satisfaction with digital equipment handling at their different universities at which they are affiliated. These questions were asked after knowing the gender of the interviewees, categories of universities (public, private or attached to churches), the city where the universities are located (to remark it is urban or from countryside) upper degrees or diplomas delivered by those universities.

Table 1 shows that both genders participated in our semi-structured interview with a rate of males occupying 67.6% out of our respondents and females 32.4%.

Repartition of our interviewees is 55.4% from public universities, 37.3% from private universities and 7.3% from private universities attached to churches (See Figure 1).

Considering cities of universities of our respondents' affiliation, Bujumbura city comes first with 54.5%, followed by Ngozi with 22.2%, Gitega 14.3%, Bubanza 5.8% and Muyinga with 3.2% (See Figure 2).

Table 1. Gender of the respondents.

		Frequency	Percentage	Valid Percentage
Valid	Female	111	32.4	32.4
	Male	232	67.6	67.6
	Total	343	100.0	100.0

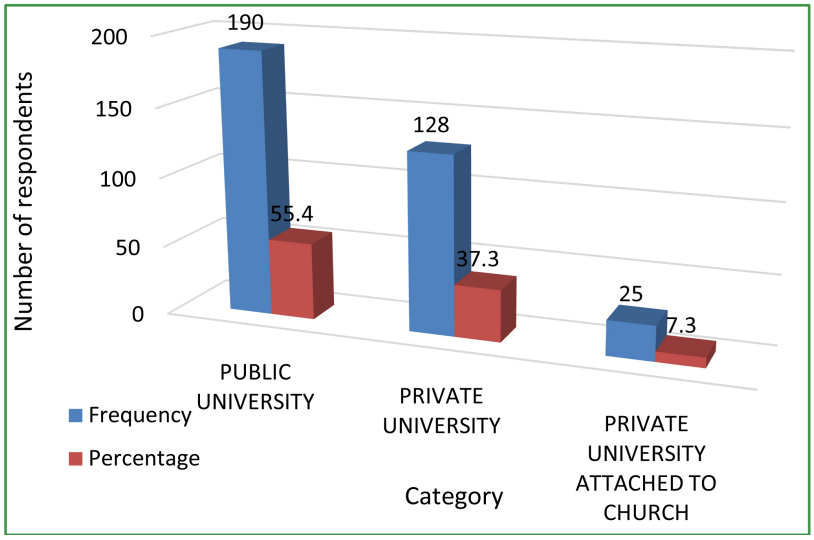

Figure 1. Institution category.

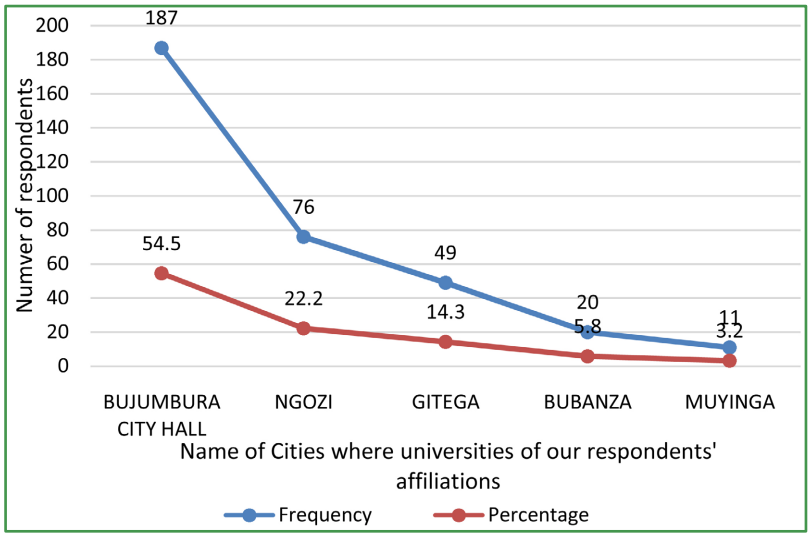

Figure 2. City where is the institution.

Our interviewees were from universities that are legally authorized to deliver master's degree diploma at the average of 65%, some still are only allowed to deliver bachelor's degree diploma about 21% and PhD degree 14% (See Figure 3).

3. Results

The results relate to this research are detailed in the following figures.

Results from Figure 4 show that only 16.3% of our respondents agree that there are ICT services at different universities in Burundi. 28.3% say there are no such services at the universities in Burundi while 55.4% say such service are being implemented but do not precise exactly when they plan to have them finished and operational.

Results show that students' administrative registration is operated by their physical appearances in front of registrar services of different universities at an average of 88.9%; electronic registration at an average of 6.7% and a hybrid system allows both procedures at an average of 4.4% (See Figure 5).

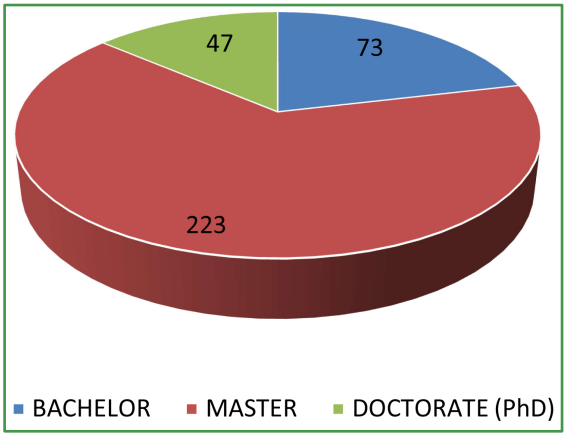

Figure 3. Upper degrees provided universities in frequency of participation of our interviewees.

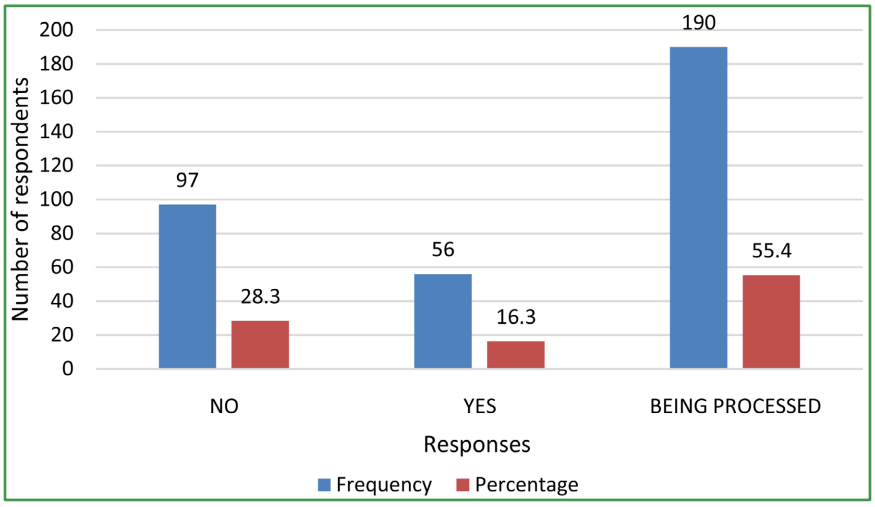

Figure 4. Opinion about ICT service existence in Universities.

Figure 6 lets us remark that 89.5% of our interviewees as students do not have access to sufficient computer equipment and internet while only 10.5 access to them.

Results from Figure 7 show that an average of 95.6% of our interviewees as students, do not have access to ICT tools, and only 4.4% access it.

Results from Figure 8 show that 97.7% of our respondents deny the existence of E-learning at their universities in Burundi and only 2.3% accept it.

Targeting to ensure our interviewees' satisfaction with digital and electronic handling, only 3.5% are satisfied while those who are not satisfied (25.4%) together

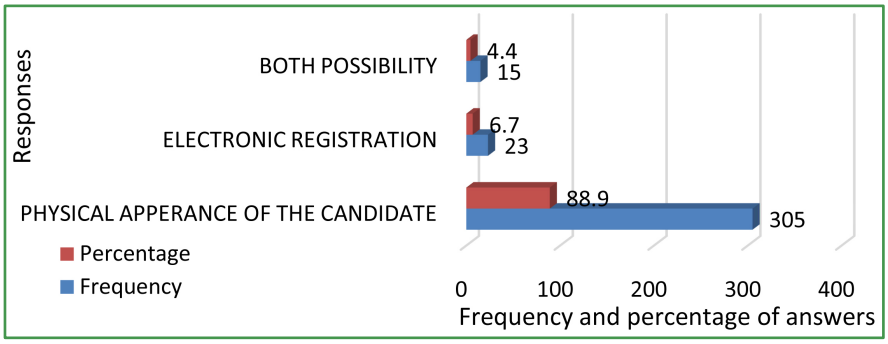

Figure 5. Students' administrative registration procedure.

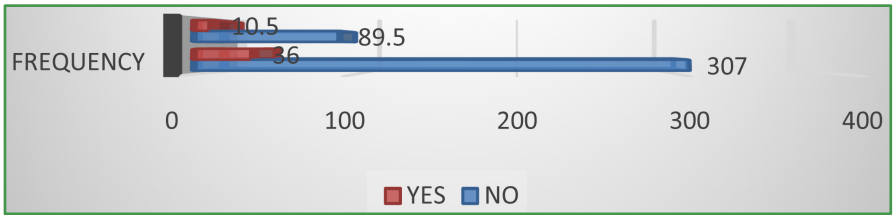

Figure 6. Student's access to sufficient computer equipment and the Internet.

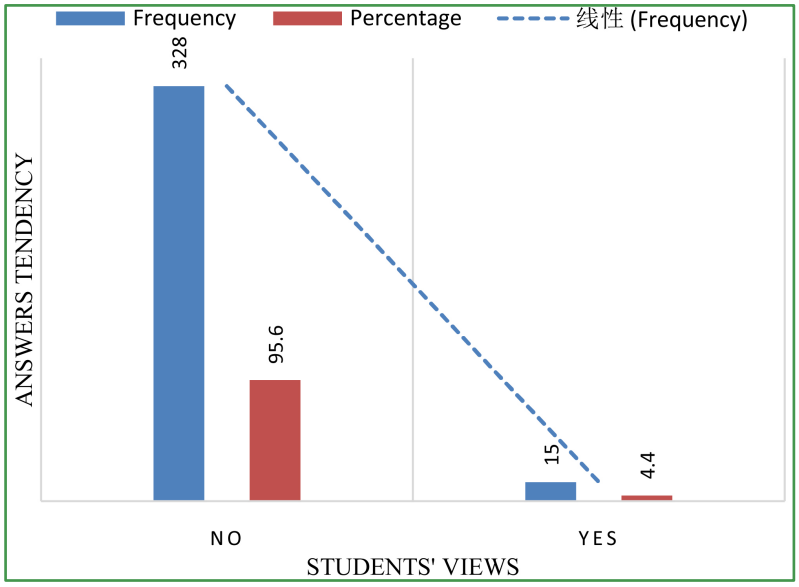

Figure 7. Students' access to ICT tools.

with others who are not at all satisfied (71.1%) make a total of 96.6% of our interviewees who are not satisfied (See Figure 9).

4. Discussion of the Results

Results show that only 16.3% of our respondents agree that there are ICT services at different universities in Burundi. 28.3% say there are no such services at the universities in Burundi while 55.4% say such service are being implemented but do not precise exactly when they plan to have them finished and operational (See Figure 4). Thus, the situation of ICT-led innovations is not as well done as the way they are in other countries in Saudi Arabia. There, ICT are known to have brought new paradigms in:

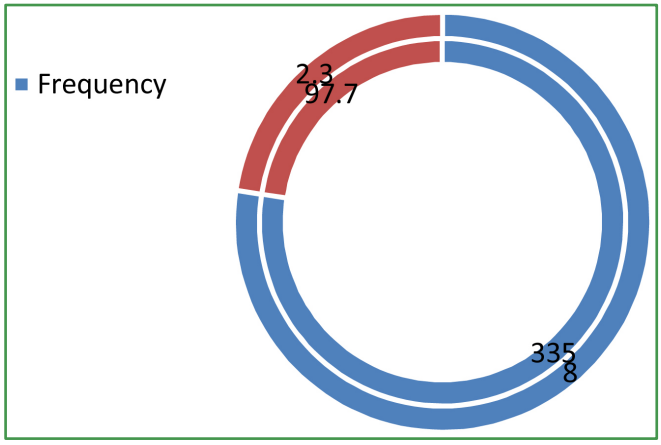

Figure 8. Existence of E-learning program.

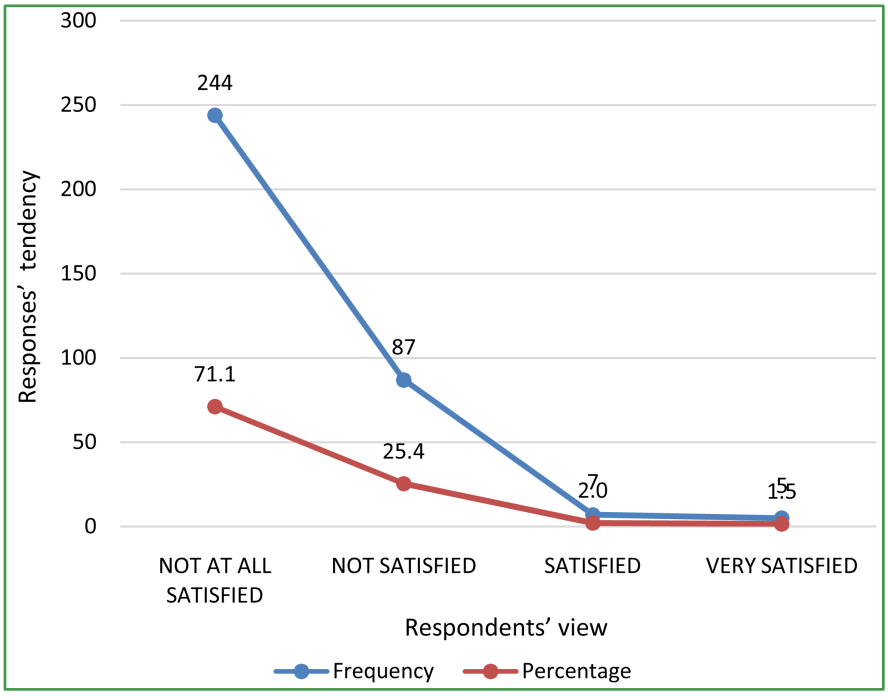

Figure 9. Satisfaction with digital equipment handling.

- cloud computing;
- the internet of things;
- big data;
- social-networking;
- block chain to boost its sustainability;
- E-Learning and mobile learning meaning (Alam et al., 2021).

E-learning environment brings a students' value added with a stable and an easy to use E-learning quality producing assurance, responsiveness, tangibility, course website and learning content with positive correlation with the perception with empathy and reliability as significant to student perception (Uppal et al., 2018). E-learning created new marketplaces, products, processes, and services through E-learning in an extension of the distance learning mode of education that started in the 1980s in Saudi Arabia (Alam et al., 2021). It has been proved that many efforts had been expected characterized with social influence that increases students' adoption of e-learning systems in developing countries (El-Masri et Tarhini, 2017).

Results show that students' administrative registration is operated by their physical appearances in front of registrar services of different universities at an average of 88.9%; electronic registration at an average of 6.7% and a hybrid system allows both procedures at an average of 4.4% (See **Figure 5**). Facilitating students' registration is favorite to them for even some who live afar from offices get to get registered (Phillips et Johnson, 2022). Student Registration System for Universities, a kind of management information system, is very important and must apply digital system to record all required information for student registration quickly and efficiently and produce statistics on the students' basic information, registration information, and payment information and give results of the analysis (Liu et al., 2012).

89.5% of our interviewees as students do not have access to sufficient computer equipment and internet while only 10.5 access to them (See **Figure 6**). Burundi does not implement E-learning system that revealed itself essential and important especially during COVID-19 (Aguilera-Hermida, 2020; Barrot et al., 2021; Baticulon et al., 2021). Educational outcomes nowadays are a fruit of technology in which schools, families, and policymakers must invest with great impact in education (Bulman et Fairlie, 2016).

Results denote that an average of 95.6% of our interviewees as students, do not have access to ICT tools, and only 4.4% access it (See **Figure 7**). In this case, the education system in Burundi shuts the opportunities brought by E-learning and ICT tools applied in it helping learners to access, extend, transform and share ideas and information in multi-modal communication styles and format but also sharing learning resources and spaces in collaborative learning principles that enhance critical thinking, creative thinking and problem-solving skills (Sathiyabama et al., 2023). Burundi does not consider ICT use in the classroom is important for giving students opportunities to learn and apply the required 21st

century skills in the context its use in teaching and learning can assist teachers in overcoming the obstacles and become successful technology users (Ghavifekr et al., 2016) while such evolution started even in secondary schools (Albugami et Ahmed, 2015) and in primary schools (Li et al., 2018) in others parts of the world. At least, Burundian universities need to refer to Tanzanian ones. They manage to offer accessibility and usability of Information and Communication Technology facilities to facilitate learning among visually-impaired students (Eligi et Mwantimwa, 2017).

Results show that 97.7% of our respondents deny the existence of E-learning at their universities in Burundi and only 2.3% accept it (See **Figure 8**). Higher education today faces a range of challenges, including doubts about its role in society, fragmented functions within universities, concerns about sustainability, and growing diversity of the student population, Massive Open Online Courses (MOOCs) may transform the current situation (Zhou, 2016). MOOCs are essential for peer effects are driven by improved group interaction rather than adjustments in teachers' behavior or students' effort (Feld et Zölitz, 2017).

Targeting to ensure our interviewees' satisfaction with digital and electronic handling, only 3.5% are satisfied while those who are not satisfied (25.4%) together with others who are not at all satisfied (71.1%) make a total of 96.6% of our interviewees who are not satisfied (See **Figure 9**). It has been proved that students' satisfaction depends on their perception about their goals achievement especially through the quality of their interactions between themselves or between them and teachers (Diep et al., 2017). The points of view they express their opinions about their dissatisfaction in regards to the lack of ICT tools or access to them is meaningful (Mperejimana et Sindayigaya, 2023; Nduwimana et Sindayigaya, 2023a, 2023b; Nyabenda et Sindayigaya, 2023).

This dissatisfaction correlates with the fact that in higher education, e-learning is gaining more and more impact, especially in the design and format of curricula (Mperejimana et Sindayigaya, 2023; Sindayigaya, 2023b). Many factors are seem to dominate this field like educator presence in online settings, interactions between students, teachers and content, and designed connections between online and offline activities as well as between campus-related and practice-related activities (Nortvig et al., 2018).

Findings all along this research confirm that the digitalization of education in Burundi is still underground for even students registration are made by physical appearance of students in most of universities apart from the public ones. Students do not have a full access to electronic installations. No internet is provided to students and no e-learnings are provided in most of universities in Burundi.

5. Conclusion

This article aims to analyze the way Burundi is entering in the evolution of blended learning through e-learning and ICT usage in higher education and implementing the requisite of e-learning in higher education. Having collected data

using semi-structured interviews with 343 interviewees applying kobo-collect tools and analyzing findings with Microsoft Office Excel and IBM SPSS 25, results are turning hopeless. Students express that they do not access to ICT tools and internet. This is a big issue for in this way, universities in Burundi, from registration to curricula; require physical presence that is the only privileged method.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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