The Role of Technological Innovations on the Quality of Education in Private Universities in Hargeisa Somaliland

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Abstract   **Review Article**

Since literacy-based education was introduced to Somaliland, the educational system has experienced a number of modifications over time. For the most part of its existence, Somaliland followed a traditional education system that was inflexible, uncreative, and resource-poor. It didn't draw attention to the unique characteristics of each kid, it didn't question their inherent inventiveness, and it didn't arouse passion or zeal. (Hidig & Saed, 2023). Somaliland's educational system has seen a significant transformation in recent years, largely due to the impact of western curriculum. The emphasis has been on improving the quality, relevance, accessibility, and equity of education. One important resource for this change and revision of the educational system is the use of technology developments. The impact of technology advancements on Somaliland's educational standards is investigated in this study. The general objective of the study was to determine the role of technological innovation on quality of education in private universities in Hargeisa, Somaliland. The data was analyzed through descriptive statistics using mean, standard deviation and percentages and inferential statistics using binary logistic regression analysis. The study used SPSS version 25 as an analytical tool. The study found that that the regression model is statistically significant, with Technological Innovation explaining a significant portion of the variance in Quality of Education. The F-statistic is high (69.084), and the p-value is extremely low (.000), confirming that the relationship between the predictor (Technological Innovation) and the (Quality of Education) is strong and significant. The paper recommends that the universities could consider increasing the availability of devices through lending programs or subsidies. Also Conducting awareness campaigns about existing technological resources could help. The university should assess and enhance the current resources, ensuring they meet student needs. Implement a feedback mechanism to continuously gather student input on technological resources and make necessary adjustments. The university should invest in improving internet infrastructure on campus.

Keywords: Behaviour, Psychology, well-being, Corporal Punishment

1.0. INTRODUCTION

Education is the foundation of social progress; it is always changing (Kruss, McGrath, Peterson, & Gastrow, 2015). Technological innovations over the past few decades have completely changed how we educate, learn, and interact with information (Lazar, 2015). Good education goes beyond just imparting knowledge. It includes practical skills, critical thinking, and holistic growth. Good education encourages lifelong learning and prepares people for success in a changing global environment. Individual empowerment, economic prosperity, and social mobility are all accelerated by high-quality education. It closes gaps, lessens inequality, and gives students the tools they need to make significant contributions to society. Prior to the use of technology breakthroughs in educational systems, there were several obstacles in the way of education. Effective learning was hampered by crammed classrooms, out-of-date materials, and restricted access. These limits degraded the quality (Haleem, Javaid, Qadri , & Suman , 2022).

Due to insufficient infrastructure or inaccessible areas, many students were unable to attend school. There were few textbooks, instructional aids, and learning tools available, and most of them were out-of-date, which made it difficult to teach effectively. A one-size-fits-all strategy resulted from teachers' struggles to meet the particular learning needs of each student in large class sizes, which made personalized attention almost impossible (Soloway, 1993). Since not all teachers have the necessary training or credentials, instructional strategies and student engagement suffered greatly from a lack of professional development. Critical thinking, creativity, and practical skills were prioritized less in traditional education, which

placed a strong emphasis on rote memorization. Grading was subjective and time-consuming. Due to the lack of standardized testing, it was challenging to judge student progress impartially. Educational possibilities were impacted by socioeconomic inequality. Students from underrepresented backgrounds encountered more difficulties. There was little interaction in the static classroom environments. There were only textbooks and chalkboards for learning. Language obstacles impeded efficient communication in multilingual settings. Pupils found it difficult to understand concepts presented in foreign languages. Disengagement was caused by dry lectures and a lack of visual assistance. Pupils frequently lost interest in their coursework. Giving timely input was difficult. No one provided the students with individualized advice on how to get better.

Many eras and attempts to integrate technologies into the educational system are covered in the history of technical advancements in education. The 1800s saw the beginning of distant learning. Students might learn remotely through correspondence courses and mail-based learning; printed materials were the main way that content was delivered (McIsaac, 1999). The idea of electronic reading devices, or eReaders, first surfaced in the 1940s (Crook, 1995). Early innovators envisioned digital material to be accessible through portable devices. eReaders revolutionized the way we consume instructional materials, even if it took some time for them to become widely available.

The use of computer programming in education began to grow in the 1960s. Coding became a necessary ability for children to interact with computers using early programming languages like BASIC, which promoted computational thinking (Kantor, 1991). The 1980s saw the globalization of educational technology, with increased accessibility to computers, a rise in cross-border cooperation, instructional software, and multimedia that enhanced learning experiences.

The 1990s were a time of collaboration and connectedness. The internet transformed research, information exchange, and communication by connecting students worldwide through email, online discussion boards, and virtual classrooms. Learning Management Systems (LMS) and virtual classrooms were popular in the 2000s. Online learning was made possible by platforms like Moodle, Blackboard, and Canvas. Discussion boards, interactive tests, and multimedia presentations have grown popular (Ozer, 2004).

Personalised and self-paced learning have been more popular recently, and learning platforms that are adaptive have changed their content according to each user's progress. The educational system in Somaliland has remained largely constant over its whole history, despite worldwide era changes. Somaliland was confined to the conventional era of schooling. The establishment of schools—which replaced the outdoor classroom with a classroom—was the biggest and most extensive change to Somaliland's educational system during that time. But the education remained essentially the same. In a teacher-centered learning environment, students were merely listening to lectures from teachers for long stretches of time without any kind of engagement, collaboration, or innovative problem-solving techniques to make sure they understood what the teacher was saying (Hidig & Saed, 2023).

Technology bridges geographic gaps, making education accessible to remote areas; adaptive algorithms tailor content to individual needs; and gamification, virtual labs, and interactive simulations enhance student engagement. The importance of technological innovations should not be understated. Analytics help discover areas for improvement and inform instructional design (Ng, 2015).

1.1. Problem Statement

Global technological advancements have played a major role in raising educational standards and producing inclusive, effective, and idealistic curricula that focus on students' individual differences, ignite their imaginations and creativity, and advance their individualistic growth (Che, Reynolds, Taveres, Notari, & Lee, 2017). Over the years, numerous obstacles, problems, and hurdles related to education have been handled or resolved by technology advancements. For example, access to high-quality education has been made possible for people from a variety of socioeconomic backgrounds, thereby closing the gap between access and equity (Daniel, Kanwar, & Uvalic-Trumbic, 2009).

While Somaliland has made a transition to modern education, there are still many obstacles standing in the way of high-quality education, including a lack of support and training for teachers—the majority of whom are underprepared and in rural areas in particular—a lack of equitable access to high-quality education for students from all socioeconomic backgrounds and geographic locations, and low student motivation and engagement stemming from out-of-date curricula and a dearth of engaging resources (Hidig & Saed, 2023). This study investigates how technology advancements affect the standard of instruction provided in Somaliland's schools and universities.

1.2. Objectives

1.2.1.   General Objective

To determine the role of technological innovations on the quality of education in private universities in Hargeisa, Somaliland

1.2.2.   Specific Objectives

- To examine the access to technological innovation in private universities in Hargeisa, Somaliland
- To evaluate the quality standards of education in private universities in Hargeisa, Somaliland
- To analyze the relationship between the access to technological innovations and quality standards in private universities in Hargeisa, Somaliland.

2.0. METHODOLOGY

This part, the paper describes the methodologies used in this paper detailing the research area, research design, target population, sampling, data collection method and ethical consideration.

2.1. Research Area

The research area that the paper focused was the private universities in Hargeisa, Somaliland specially Golis university, Civil Service university and Admas university.

2.2. Target population

The target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions (UNFPA, 2014). In this study, the target population consist teachers and students of the private universities in Hargeisa, Somaliland.

2.3. Research Design

Research design is defined as the framework or blueprint for conducting the research project, specifying the procedures necessary for obtaining the information needed to structure or solve research problems (Cooper & Schindler, 2014). This study used a descriptive research design, which involves collecting data that describes the characteristics of the group under study and the phenomena of interest. The preference for a descriptive design in this study is due to its ability to systematically describe the role of technology innovation on quality of education in students and teachers private universities in Hargeisa.

2.4. Sample and Sampling

A sample is a subset of a larger population and sampling means selecting the group that you will actually collect data from in your research. The paper used census since whole the population was accessible and no sample was no needed.

2.5. Data Collection Method

The study was employed questionnaire survey methods to collect data. The researcher was used questionnaires because the study concerns with variables that could not be observed such as views, opinions, perceptions, and feelings of the respondents. The questionnaire also was enabled the researcher to keep permanent records in the respondents' own handwriting for future reference (Oso, 2013).

2.6. Ethical consideration

The researcher ensured that participants are well informed of the intentions of the study so that they can participate from a point of information. The researcher also ensured that data collected was analyzed professionally and that it was not forged to conform to predetermined opinion. Further, to protect the respondents identities data was reported as a block instead of highlighting individual cases. These are usually the major ethical issues in research and they were fully covered in the study.
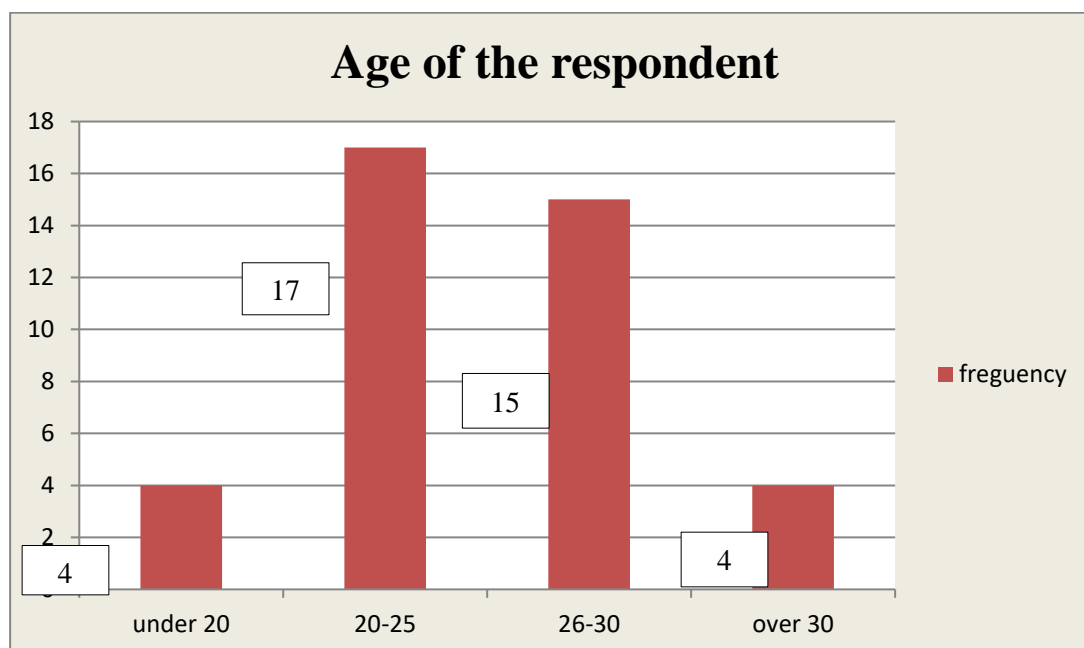
3.0. DATA ANALYSIS

3.1.1.   Demographic of the respondents
In this part, the paper shows the demographic of the respondents who participated the survey.

3.1.2.   Age of the Respondents

Figure 1. Age of the respondents
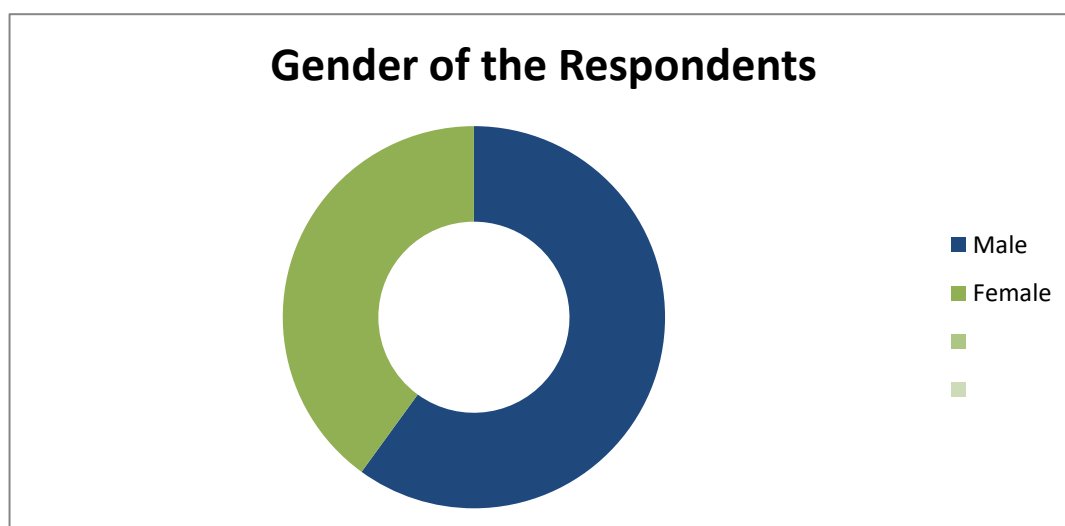
Age of the respondent

This figure presents the age distribution of 40 respondents in a survey. The table is broken down into four age categories, with the frequency and percentage of respondents in each category. A small portion of 4 respondents (10%) of the respondents are under 20 years old. This indicates that younger individuals were less represented in this survey, possibly due to the nature of the survey or the target population being older. Similar to the "Under 20" group, the "Over 30" category is also less represented which is 4 respondents with the percentage of (10%) This suggests that the survey might not have been as relevant or appealing to individuals over 30, or that they were less available to participate. The largest group of respondents falls (20-25) which was 17 respondents with the percentage of (42.5%) within this age range, comprising nearly half of the total sample. This could suggest that the survey was particularly relevant to people in their early twenties, or that this age group was more readily accessible or willing to participate. The second-largest group is the 26-30 age category with 15 respondents and percentage of (37.5%), representing just over a third of the respondents. Together with the 20-25 age group, these two categories dominate the respondent pool, indicating that the survey has a strong focus on young adults.

3.1.3.   Gender of the Respondents

Figure 2. Gender of the respondents
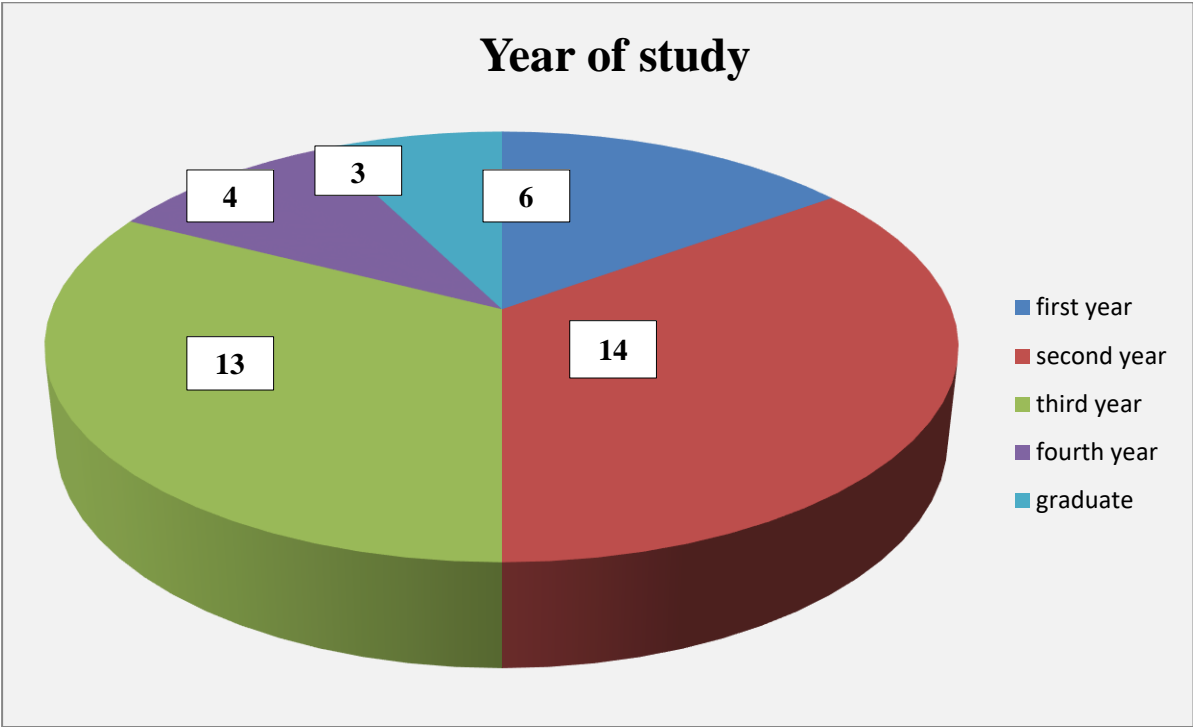
Gender of the Respondents

This figure presents the gender distribution of 40 respondents in a survey, detailing the frequency and percentage of male and female participants. Males make up the majority of the respondents, accounting for 60% of the total. This indicates a higher level of participation or representation among males in this survey. The predominance of male respondents could suggest that the topic of the survey is more relevant to males or that males were more accessible or willing to participate. Females comprise 40% of the respondents, which is a significant but lesser portion compared to males. While there is a noticeable gender imbalance, the number of female respondents is still substantial enough to provide insights from a female perspective.

3.2. Year of Study

Figure 3. Year of study

This figure summarizes the distribution of respondents by their year of study, showing the frequency and percentage of participants across different academic years. First-year students make up 15% of the respondents. This indicates that a relatively small proportion of the survey participants are in their first year of study, possibly due to limited experience or familiarity with the academic environment. The largest group of respondents is second-year students, who account for 35% of the total. This suggests that the survey may have had particular relevance or appeal to students in their second year, or that they were more engaged in the survey process. Third-year students represent 32.5% of the respondents, making them the second-largest group. Their significant presence indicates that the survey is also highly relevant to students in this stage of their academic journey. Fourth-year students constitute only 10% of the respondents. This lower participation could be due to a variety of factors, such as being more focused on completing their studies or preparing for graduation, leading to less involvement in surveys. Graduate students are the smallest group, representing just 7.5% of the respondents. This may indicate that the survey was less relevant to graduate students, or that this group was harder to reach or less interested in participating.

3.3. Measurement of variables

Table 1: Access to Technological Innovation

Statement	Category	Frequency N (40)	Percentage (%)
I have easy access to technological devices (e.g., laptops, tablets, smartphones) for educational purposes.	Strongly disagree	4	10%
	Disagree	1	2.5%
	No Comment	22	55%
	Agree	13	32.3%
	Strongly agree	0	0%
The university provides sufficient technological resources for students.	Strongly disagree	1	2.5%
	Disagree	5	15%
	No Comment	18	45%
	Agree	16	40%
	Strongly agree	0	0%
I have reliable internet access for my studies.	Strongly disagree	2	5%
	Disagree	0	0%
	No Comment	19	47.5%
	Agree	19	47.5%
	Strongly agree	0	0%
Educational software and platforms (e.g., Moodle, Blackboard) enhance my learning experience.	Strongly disagree	0	0%
	Disagree	0	0%
	No Comment	19	47.3
	Agree	21	52.5%
	Strongly agree	0	0%

This table presents survey data on students' perceptions of technological resources and their impact on education. Here's an interpretation of each statement and the associated responses. In the first statement, most students either agree or do not comment on having access to technological devices, a small percentage strongly disagree or disagree, indicating some students feel they lack easy access. In the second statement, the majority of students either agrees or refrains from commenting on the sufficiency of technological resources provided by the university. A notable percentage disagrees, suggesting room for improvement in the resources provided. In the third statement, Students are evenly split between agreeing and not commenting on the reliability of their internet access, with a small portion strongly disagreeing, indicating possible issues with connectivity for some. In the fourth statement, over half of the students agree that educational software enhances their learning experience, while the rest do not comment. No students disagree, reflecting a generally positive view. In the fifth statement, majority of students do not comment on the ease of use of online learning platforms, but a significant portion agrees that they are easy to use. A small percentage of students find these platforms difficult to use. In the sixth statement, nearly half of the students agree that educational software has improved their academic performance, while a notable portion disagrees, indicating mixed perceptions.

Table 2: Quality of Education

Statement	Category	Frequency N (40)	Percentage (%)
I am satisfied with the integration of technology in my education.	Strongly disagree	0	0%
	Disagree	5	12.5%
	No Comment	23	57.5%
	Agree	12	30%
	Strongly agree	0	0%
Technological innovations have positively impacted the quality of education in my University.	Strongly disagree	9	22.5%
	Disagree	9	22.5%
	No Comment	13	32.5%
	Agree	9	22.5%
	Strongly agree	0	0%
I believe that continued investment in educational technology will further improve the quality of education.	Strongly disagree	2	5.0%
	Disagree	3	7.5%
	No Comment	15	37.5%
	Agree	20	50%
	Strongly agree	0	0%
Technology has helped me to better understand complex concepts and subjects	Strongly disagree	1	2.5%
	Disagree	4	4%
	No Comment	23	57.5%
	Agree	12	30%
	Strongly agree	0	0%
My academic performance has improved due to the integration of technology in my education	Strongly disagree	1	2.5%
	Disagree	5	12.5%
	No Comment	15	37.5%
	Agree	19	47.5%
	Strongly agree	0	0%
Technology has allowed teachers to adopt more effective and varied teaching methods	Strongly disagree	4	10%
	Disagree	15	37.5%
	No Comment	11	27.5%
	Agree	10	25%
	Strongly agree	0	0%
Teachers are well-trained to use technology effectively in their teaching practices	Strongly disagree	9	22.5%
	Disagree	8	20%
	No Comment	14	35
	Agree	9	22.5%
	Strongly agree	0	0%
I find online learning platforms easy to use.	Strongly disagree	2	5%

Disagree	2	5%
	24	60%
Agree	12	30%
Strongly agree	0	0%
Strongly disagree	0	0%
Disagree	6	15%
No Comment	15	37.5%
Agree	19	47.5%
Strongly agree	0	0%

(Left cell spanning: The use of educational software has improved my academic performance.)

This table reflects students' perspectives on the integration of technology in education, its impact on their learning, and the effectiveness of educators in utilizing technology. In the first statement, the majority of students either did not comment or agreed that they are satisfied with the integration of technology in their education. However, 12.5% are dissatisfied, indicating some students are not fully satisfied with the current level of technology integration. In the second statement, the students' opinions are divided on whether technological innovations have positively impacted the quality of education. An equal percentage of students strongly disagree, disagree, and agree. A significant portion (32.5%) did not comment, suggesting uncertainty or ambivalence. In the third statement, half of the students believe that continued investment in educational technology will improve education quality, while a smaller percentage disagrees. A significant portion of students refrained from commenting, indicating a degree of uncertainty. In the fourth statement, While 30% of students agree that technology helps them understand complex concepts, the majority either did not comment or disagreed, suggesting that many students are either neutral or not convinced of its effectiveness in this area. In the fifth statement, nearly half of the students agree that their academic performance has improved due to technology, while a smaller portion disagrees. A notable number of students refrained from commenting, indicating mixed perceptions. In the sixth statement, a significant portion of students (37.5%) disagree that technology has allowed teachers to adopt more effective teaching methods. However, 25% agree, and a substantial number (27.5%) did not comment, indicating varied perceptions. In the final statement, Students are divided on whether teachers are well-trained to use technology effectively. A significant portion strongly disagrees or disagrees, suggesting concerns about teachers' proficiency with technology. However, an equal percentage (22.5%) agree, with many students not commenting

3.4. Regression Analysis

ANOVA

ANOVAª						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	364.826	1	364.826	69.084	.000ᵇ
	Residual	200.674	38	5.281		
	Total	565.500	39			
a. Dependent Variable: QualityEducation						
b. Predictors: (Constant), TechnologicalInnovation						

The ANOVA table shows that the regression model is statistically significant, with Technological Innovation explaining a significant portion of the variance in Quality of Education. The F-statistic is high (69.084), and the p-

value is extremely low (.000), confirming that the relationship between the predictor (Technological Innovation) and the (Quality of Education) is strong and

significant. This suggests that improvements or changes in Technological Innovation are likely to have a significant impact on the Quality of Education

Coefficients

Coefficientsª

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.967	2.408		.402	.690
	TechnologicalInnovation	.705	.085	.803	8.312	.000
a. Dependent Variable: QualityEducation						

The regression analysis shows that **Technological Innovation** is a strong and statistically significant predictor of **Quality of Education**. The unstandardized coefficient (0.705) suggests that for each unit increase in **Technological Innovation**, the **Quality of Education** improves by 0.705 units. The high standardized coefficient (0.803) further confirms the strong positive relationship between the two variables. The very low p-value (0.000) for **Technological Innovation** indicates that this finding is statistically significant and unlikely to be due to random chance.

In summary, the analysis suggests that **Technological Innovation** plays a crucial role in enhancing the **Quality of Education**.

4.0.RECOMMENDATIONS

Based on the data provided, here are some recommendations to address the issues highlighted in the table:

- The university could consider increasing the availability of devices through lending programs or subsidies. Also Conducting awareness campaigns about existing technological resources could help.
- The university should assess and enhance the current resources, ensuring they meet student needs.
- Implement a feedback mechanism to continuously gather student input on technological resources and make necessary adjustments.
- The university should invest in improving internet infrastructure on campus.
- For students studying off-campus, partnerships with internet service providers to offer discounted rates could be beneficial.
- Ensure that educational platforms are regularly updated and maintained to enhance user experience.
- The university should work on making these platforms more user-friendly.
- Provide robust technical support to assist students facing difficulties with online platforms.
- Implement personalized learning paths within educational software to cater to individual student needs.

Involve students in the development and selection of technological tools to ensure they meet their preferences and needs.

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