

Factors influencing student learning outcomes and satisfaction: A case study approach

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ABSTRACT

Purpose: Learning outcomes play a critical role when evaluating educational programs' success and educational institutions' responsibility to deliver high-quality instruction. Educational institutions may consider improvements to fulfill the requirements of students better and enhance their emotional elements to increase interest in learning by identifying areas of strength and weakness through student learning outcomes and satisfaction evaluations. Hence, the study examines the factors for assessing student learning outcomes and Satisfaction. Methodology: A quantitative research method was utilized in this study, and 180 sample data was collected. This study employed a quantitative research design, collecting 180 sample data from students at the College of Economics, Management, and Information Systems, University of Nizwa, Oman. SEM-PLS software has been used to analyze the collected data. Findings: According to the study, educational quality (EQ) significantly impacted students' Satisfaction (SS) but not learning outcomes. There was no discernible impact of student involvement on learning outcomes or Satisfaction. Similarly, support resource quality (SRQ) does not significantly affect student learning outcomes. However, SRQ has a substantial effect on students' Satisfaction. Thus, high-quality education indicates that enhancing the learning environment should be a top priority for educational institutions. For students, self-regulated learning and metacognition are essential. Educators should constantly update and improve the curriculum to incorporate cutting-edge teaching techniques and current pedagogical trends.

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1. INTRODUCTION

Learning outcomes help measure educational programs' effectiveness and hold institutions accountable for providing quality education. By assessing student learning outcomes and Satisfaction, institutions can identify areas of strength and weakness and make improvements to meet the needs of students better. Improving students' emotional aspects is a significant benefit of the learning process. The student's interest in learning has an impact on their learning outcomes. Student learning outcomes reflect the student's capabilities after completing the learning process (Ernawati et al., 2022; Thottoli et al., 2023). To improve the caliber of pupil learning outcomes, it is essential to enhance understanding of learning potential. Students are subsequently inspired and motivated to seek careers in science, technology, math, and engineering. Additionally, students are essential to any educational institution's achievement.

Many universities and colleges focus on achieving student satisfaction rather than looking at their physical location. Also, student satisfaction has become used to measure educational institutions' performance (Wong & Chapman, 2022).

Student satisfaction is essential to every educational institution's and student's success, especially in our current global climate. The increasing use of technology has also contributed to the growing competition between institutions in the educational sector in recent years. Student satisfaction in many institutions has also led to an indicator to measure the quality and educational services in the institution. Also, student satisfaction is related to the results of educational institutions and the student himself. The student's educational experience is not related to his feelings about the quality of education he receives (Butt & Rehman, 2010). Besides its use as a performance indicator for HE institutions, student satisfaction might be discussed (Wong & Chapman, 2023). Significant learning outcomes in higher education have been achieved through high levels of student satisfaction, as student satisfaction greatly influences effects such as academic achievement, retention, and student motivation. It is essential that students are satisfied with the services provided by educational institutions, especially in the quality of education because it dramatically affects the students' level and is an indicator of the institution's performance. There are also satisfaction numbers that were used as a means of distributing resources across educational institutions (Butt & Rehman, 2010).

Given the academic programs or support services surrounding students, researchers have considered it very important for educational institutions to provide high-quality services to keep pace with the increasingly competitive education environments.

The quality of education in each institution distinguishes each institution from another, with high levels of Satisfaction with the services provided by the institution, which distinguishes the institution from its competitors (educational institutions) (Wong & Chapman, 2022). Universities or program managers develop strategies appropriate to the needs and expectations of students who wish to enroll in graduate programs and beyond through student performance and Satisfaction (Limna et al., 2022). It has also been demonstrated that student satisfaction is significantly and positively associated with the quality of learning outcomes (Zhonggen et al., 2019). Through the quality of teaching and academic services, Satisfaction with learning is vital in developing services of high accuracy and superior quality for educational institutions.

It is now necessary to put in place new changes to the teaching and learning process, which can address the challenges faced by educational institutions, as there has become much interest in student learning outcomes through the ability to solve problems and achieve academic learning, also seeking higher thinking skills, as the primary goal in the process. Learning is learning outcomes and has been expressed through knowledge and skills (Wahono et al., 2020).

The teaching materials used in learning may cause differences in learning outcomes (Afifah et al., 2022). Appointing teachers of the future requires experience and new ideas for teaching. Rapid changes in our current world also require more than superficial knowledge and skills, meaning they need excellent skills and knowledge. Globalization and cultural diversity have affected economic forecasting and a change in education. Also, teachers must accept a complex work and living environment; for example, during the COVID-19 pandemic, teachers must know how to overcome educational difficulties and challenges and overcome them. Also, teachers should support students and prepare them for the unknown future, as the teacher must have high knowledge and skills in education (Møller-Skau & Lindstøl, 2022). Thus, the current study focuses on students' learning outcomes and Satisfaction to address the independent variables (education quality, support resource quality, and students' involvement).

As far as the researchers are aware, no case studies focus on students' satisfaction and learning results in an Omani context. However, Salem et al. (2024) examined how various learning environments (online, mixed, and in-person) impact students' performance. Based on the above critical discussion, the

authors felt that an in-depth analysis of student satisfaction and learning outcomes is necessary. In its novel approach, this study investigates the factors that impact learning outcomes and Satisfaction in the Omani context through a case study approach. By providing an understanding of the educational background of Oman's Higher Education Institutes and an in-depth examination of strategic advancements in the field of education, this research aims to close gaps in the body of literature.

Hence, the current research objectives and research questions are as follows:

Objectives of the research

1. Examine the influence of educational quality on students' learning outcomes.
2. Investigate the influence of educational quality on student satisfaction.
3. Explore the influence of resource quality on students' learning outcomes.
4. Assess the influence of support resource quality on student satisfaction.
5. Examine the influence of student involvement on students' learning outcomes.
6. Investigate the influence of student involvement on student satisfaction.

Research Questions

1. How does educational quality influence students learning outcomes?
2. How does educational quality influence student satisfaction?
3. How does support resource quality influence students' learning outcomes?
4. How does support resource quality influence student satisfaction?
5. How does student involvement influence students' learning outcomes?
6. How does student involvement influence student satisfaction?

This study's dependent and independent variables are student learning results and happiness, educational quality, the caliber of supporting resources, and student participation. To better understand the factors affecting university students' learning outcomes and degrees of Satisfaction, this research study examines the relationship between independent variables and the two dependent variables. Figure 1 displays the study's conceptual structure and the independent and dependent variables.

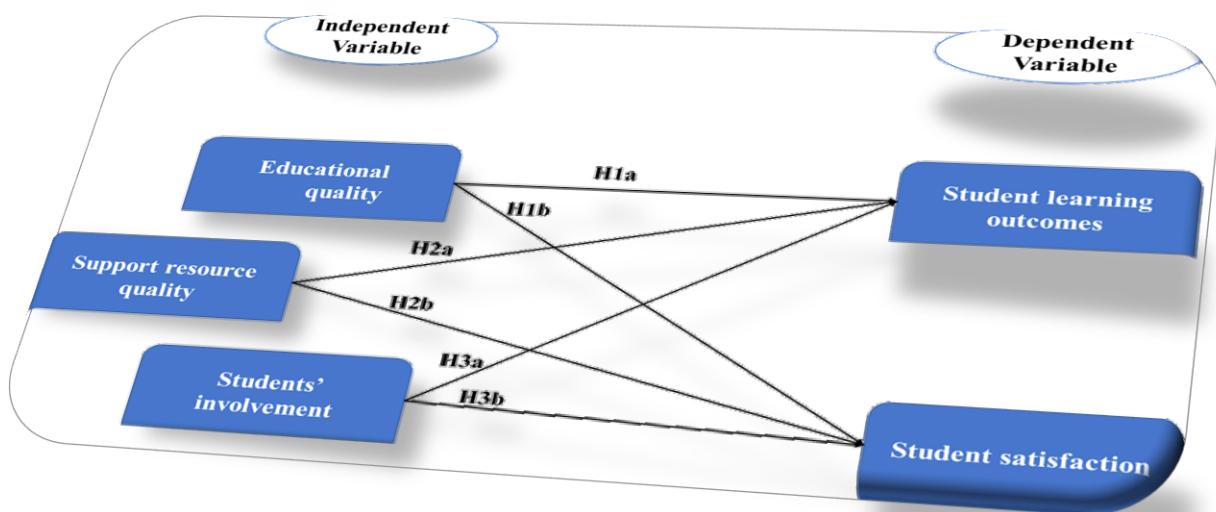


Figure 1. Research Framework (Source: Authors own creation)

2. Literature Review

The Link between educational quality on students learning outcomes and student satisfaction.

The quality of teaching affects the quality of education in the educational institution, the achievement of learning for all, or anything else that aims to increase the need for education and improve its quality. Also, reducing inequality in educational institutions, where this must be taken into account (Fomba et al., 2022). Students' participation in special training activities is considered a problem in education as it takes time. Therefore, students' participation in educational activities could be better, leading to low morale among students in education and, thus, low self-efficacy, which leads to low academic achievement and low student satisfaction (Prifti, 2022). Hence, it is hypothesized that:

H1a: The quality of education positively affects student learning outcomes.

H1b: The quality of education negatively affects student satisfaction.

The Link between support resource quality on Students' learning outcomes and Satisfaction.

Online teaching has greatly improved student learning outcomes compared to traditional education that does not use technology. Technology has helped facilitate learning and achieve effective educational results that depend on the teacher's competence (Liu et al., 2022). The source of learning significantly influences the entire teaching process, as it is on the Internet that learning resources appropriate to the learning content in textbooks must be provided. Thus, students' Satisfaction with online learning resources affects their teaching effectiveness and develops the point of student learning (Zhu et al., 2022). Hence, it is hypothesized that:

H2a: Support resource quality has a positive impact on student learning outcomes.

H2b: Support resource quality has a positive impact on student satisfaction.

The Link between student involvement in students learning outcomes and student satisfaction.

Digital technologies have a positive impact on student learning, as digital technologies must be adequate for teachers to use, thus encouraging student participation in activities and interactions, leading to positive learning outcomes (Wekerle et al., 2022). It was found that students who are highly involved in direct education and technology reflect the environment in which they interact socially. Technology and educational activities were presented to stimulate student engagement through which student academic satisfaction is assessed (Memon et al., 2022). Hence, it is hypothesized that:

H3a: Students' involvement has a positive effect on student learning outcomes.

H3b: Students' involvement has a positive effect on student satisfaction.

3. METHODS

This research project is a quantitative study. It involves collecting numerical data through a survey instrument. The study aims to test a specific hypothesis or answer a research question using statistical analysis techniques. The results are presented using numerical summaries and statistical analysis. This study was conducted during the spring semester of 2023, where data were collected from February 15, 2023, to March 21, 2023, as this study is based on collecting primary data. The questionnaire is adapted from Duque and Weeks (2010).

The population of this study consists of students from the College of Economics, Management, and Information Systems at the University of Nizwa. The sample size is 180 respondents. Students from the College of Economics, Management, and Information Systems at the University of Nizwa for a unit of evaluation. The variables in this study were measured using a set of survey methods that included questionnaires. This study used the PLS-SEM program, which contains the partial least squares approach, to analyze the data. This program provides more clarification and understanding of how the variables

relate. The PLS-SEM program is through which the conclusions are explained accurately and understandably.

Reliability and validity

To show internal consistency, both Cronbach's alpha and composite reliability (CR) must be higher than the cutoff value of 0.7. The average variance extracted (AVE), which must be more than 0.5, can be used to assess convergent validity (Fornell & Larcker, 1981). Moreover, the heterotrait-monotrait (HTMT) criteria (Henseler et al., 2015) need to be utilized by researchers instead of traditional methods for evaluating discriminant validity. As a result, the validity and reliability shown in Tables 1 and Table 2 HTMT have been confirmed by the current study.

Table 1. Reliability and validity

Variables	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
EQ	0.798	0.813	0.868	0.622
SI	0.743	0.751	0.854	0.661
SLO	0.451	0.531	0.687	0.391
SRQ	0.796	0.801	0.867	0.621
SS	0.665	0.665	0.818	0.600

Source: Authors own creation

Table 2. Heterotrait-monotrait ratio (HTMT)

Variables	EQ	SI	SLO	SRQ	SS
EQ					
SI	0.836				
SLO	0.479	0.526			
SRQ	0.896	0.941	0.561		
SS	0.790	0.654	0.539	0.802	

Source: Authors own creation

4. RESULTS AND DISCUSSION

Demographic characteristics

Below, Table 3 provides demographic information for the sample selected in the current study.

Table 3. Demographic characteristics

Details	No.	%
Gender		
Male	15	8.5
Female	165	91.5
Total	180	100
Age		
<20	75	41.5
21-40	103	57.4
>40	2	1.1
Total	180	100

Details	No.	%
Nationality		
Omani	175	97.3
Non-Omani	5	2.7
Total	180	100
Major		
Accounting	65	36.2
Non-accounting	115	63.8
Total	180	100
Graduation		
Graduated	16	9
Not Graduated	164	91
Total	180	100

Source: Authors own creation

Descriptive Statistics

Table 4 below describes the descriptive statistics and the average mean of the dependent variable (Student learning outcomes) and (Student satisfaction); as we explained in the item, the student learning outcomes are 2.761 to 3.717, the mean, and the median is 2 to 4, the minimum is 1, the highest Maximum is five and the standard deviation 1.002 to 0.784. The student satisfaction is 2.383 to 2.417, the mean, the median is 2, the min is 1, the max is 5, and the standard deviation is 0.791 to 0.802. The education quality is 2.428 to 2.428, the mean, the median is 2, the min is 1, the max is 5, and the standard deviation is 0.882 to 0.796. the support resource quality is 2.483 to 2.361, the mean, the median is 2, the min is 1, the max is 5, and the standard deviation is 0.940 to 0.801. The student involvement is 2.417 to 2.406, the mean, the median is 2, the min is 1, the max is 5, and the standard deviation is 0.829 to 0.911. Thus, the broad spectrum of mean ratings and more extensive standard deviations point to different participant experiences and perceptions of educational parameters, learning outcomes, and Satisfaction.

Table 4. Descriptive Statistics

Items	Mean	Median	Observed	Observed	Standard
			min	max	
EQ_1	2.428	2.000	1.000	5.000	0.882
EQ_2	2.422	2.000	1.000	5.000	0.843
EQ_3	2.361	2.000	1.000	5.000	0.801
EQ_4	2.428	2.000	1.000	5.000	0.796
SI_1	2.417	2.000	1.000	5.000	0.829
SI_2	2.394	2.000	1.000	5.000	0.833
SI_3	2.406	2.000	1.000	5.000	0.911
SLO_1	2.761	2.000	1.000	5.000	1.002
SLO_2	2.500	2.000	1.000	5.000	0.963
SLO_3	3.722	4.000	1.000	5.000	0.850
SLO_4	3.717	4.000	1.000	5.000	0.784
SRQ_1	2.483	2.000	1.000	5.000	0.940
SRQ_2	2.456	2.000	1.000	5.000	0.819
SRQ_3	2.422	2.000	1.000	5.000	0.913
SRQ_4	2.361	2.000	1.000	5.000	0.801

SS_1	2.383	2.000	1.000	5.000	0.791
SS_2	2.478	2.000	1.000	5.000	0.922
SS_3	2.417	2.000	1.000	5.000	0.802

Source: Authors own creation

Discriminant Validity Construct

A universal application is available to verify the reliability and validity of the study variables. Each variable's average square root (AVE) should correlate with all other remaining variables. Fornell and Larcker (1981) stated that every variable's square root in its AVE should be a similarity link among variables for all other study variables for the discriminant to be valid. Table 5 below illustrates the discriminatory credibility (Student learning outcomes, student satisfaction, educational quality, support resources quality, student involvement), which are the factors to consider while assessing student learning outcomes and student satisfaction.

Table 5. Discriminant Validity

	EQ	SI	SLO	SRQ	SS
EQ	0.789				
SI	0.650	0.813			
SLO	0.359	0.353	0.625		
SRQ	0.713	0.725	0.391	0.788	
SS	0.587	0.462	0.323	0.589	0.774

Source: Authors own creation

R Square (R^2) is used to evaluate the internal components' structural model, also known as the internal model. When considering the model using PLS, it begins with an observation of R^2 of the latent endogenous construct variable. In the current study, Variable Subjective Structures have an R^2 value of 0.171 (Students' learning outcome) and an R Square Adjusted value of 0.0.157 for the student learning outcomes variable. In the current study, Variable Subjective Structures have an R^2 value of 0.404 (Student satisfaction) and an R Square Adjusted value of 0.0.394 for student satisfaction; the PLS results for R Square and R Square Adjusted are shown in Table 6.

Table 6. Explanation of the Variance

		R Square	R Square Adjusted
Exogenous Variables	-> Endogenous (Students' learning outcome)	0.171	0.157
Exogenous Variables	-> Endogenous (Students satisfaction)	0.404	0.394

Source: Authors own creation

Hypothesis Testing

The results of the hypothesis testing are shown in Table 7 (Path Coefficients); two hypotheses are supported, and four hypotheses are not supported.

Supported:

The result showed that education quality (EQ) has an impact on student satisfaction (SS), as the value of $p < 0.01$ $t = 3.156$, as this result indicates that education quality (EQ) has a positive effect on student satisfaction (SS).

The result showed that the support resource quality (SEQ) has an impact on student satisfaction (SS), as the value of $p < 0.01$ $t = 2.944$, where this result indicates that the support resource quality (SRQ) has a positive effect on student satisfaction (SS).

Not Supported:

Educational quality (EQ) does not affect the students' learning outcomes (SLO), where the p -value, $P < 0.05$, and $t = 0.255$. This result indicated that the EQ did not impact the SLOs. Similarly, students' involvement (SI) did not affect student learning outcomes (SLO), where the p -value, $P = 0.005$, and $t = 0.493$. This result indicates that SI did not affect SLOs. The result showed that student participation (SI) did not affect student satisfaction (SS), where the value of $P = 0.05$, and $t = 0.817$. This result indicates that student participation does not affect student satisfaction. The result showed that support resource quality (SRQ) does not affect student learning outcomes (SLO), where the value of $P = 0.05$, $t = 0.067$. However, support resource quality affects students' Satisfaction. This result indicates that supporting the quality of resources does not affect students' learning outcomes. Thus, the findings provide information on the precise effects that student participation, educational quality, and the quality of support resources have on learning outcomes and Satisfaction, information that might be used to inform innovative approaches for educational advancement.

Table 7. Path Coefficients

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ($ O/STDEV $)	P values	Supported / Not supported
EQ -> SLO	0.135	0.137	0.119	1.139	0.255	Not supported
EQ -> SS	0.347	0.349	0.110	3.156	0.002	Supported**
SI -> SLO	0.108	0.113	0.157	0.686	0.493	Not supported
SI -> SS	-0.025	-0.017	0.106	0.231	0.817	Not supported
SRQ -> SLO	0.216	0.212	0.118	1.831	0.067	Not supported
SRQ -> SS	0.360	0.358	0.122	2.944	0.003	Supported**

Note: Significance levels: *** $P < 0.001$ ($t > 3.33$), ** $p < 0.01$ ($t > 2.33$), * $p < 0.05$ ($t > 1.605$)

Source: Authors own creation

SEM-PLS results are shown in Figure 2, the results of testing hypotheses.

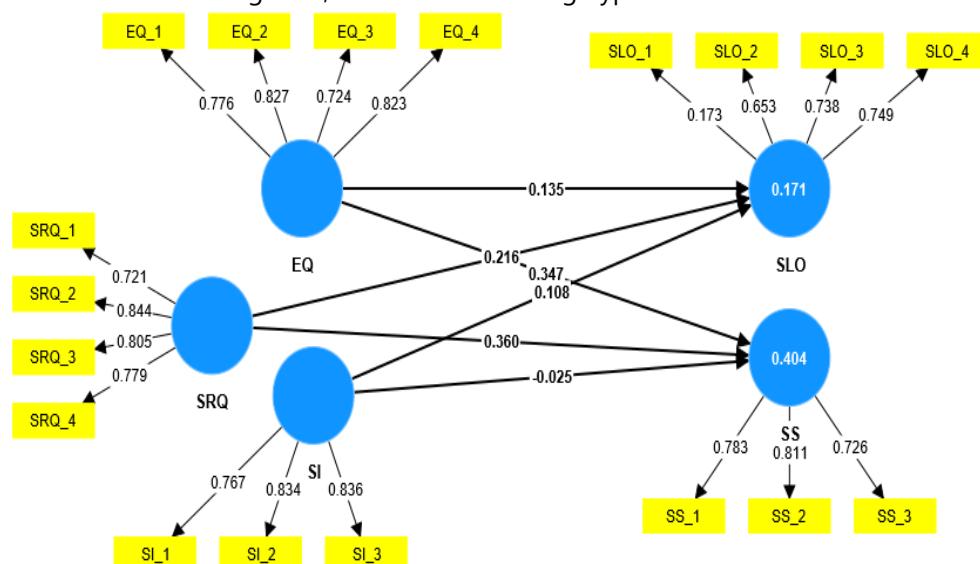


Figure 2. PLS Results (Source: Authors own creation)

Discussion

1. The impact of education quality on student learning outcomes and student satisfaction.

Table 7 shows that education quality (EQ) positively affects student satisfaction (SS). The higher the quality of education, the higher the educational level of students will be in terms of developing their abilities and scientific talents. Therefore, the students' Satisfaction will be increased, which indicates that education quality (EQ) negatively affects student learning outcomes (SLO). When the quality of education decreases in the educational institution, the success rate of the learning outcomes will be low because the lower its quality, the fewer learning outcomes and fewer types of learning and development. Thus, the student's level gradually decreased. Previous studies conducted by Liu, Zhao, and Su (2022) show that the effect of educational quality (EQ) is positive on student learning outcomes (SLO). One potential reason for the positive relationship could be that students have reported that attending university courses has facilitated their understanding and expression of their unique ethical and moral values. Also, Prifti (2022) conducted a study on the fact that EQ has a negative impact on student satisfaction (SS). However, Darawong and Widayati (2022) found that responsiveness and competence are the most critical aspects of service quality that impact student satisfaction, with dependability being the most significant factor. Empathy has a major impact on student satisfaction regarding service quality, followed by willingness to respond, competence, and dependability. The program and course contents should be clearly explained. However, another reason for the negative relationship is that the program and courses have no coherent structure. Hence, the hypothesis, *H1a*: The quality of education positively affects student learning outcomes, has been rejected. Hypothesis *H1b*: The quality of education negatively affects student satisfaction has been accepted.

2. The impact of support resource quality on student learning outcomes and Satisfaction.

The results indicated that there is a negative effect between supporting the quality of resources (SRQ) and student learning outcomes (SLO). Because the poor quality of educational resources and other essential resources for students leads to an insufficient level of education due to the low rate of development in the quality and weakness of resources, the student's inability to understand and be creative in his field of education, and the lack of the necessary methods for his development, and therefore it is natural for the student's learning results to decline, as well as a positive effect between supporting the quality of resources (SRQ) and student satisfaction (SS). Also, because the more robust the quality of the resources, the more the student will be able to innovate in his educational field, and his ambition will be higher in developing his capabilities through these vital resources. Therefore, students' Satisfaction with this institution is high.

As previous studies conducted by Wekerle et al. (2022) show that there is a positive relationship between resource quality support (SRQ) and student learning outcomes (SLO), also Zhu et al. (2022) have conducted a study between supporting quality resources (SRQ) and student satisfaction (SS) had a positive effect. However, in the current study hypothesis, *H2a*: support resource quality has a positive impact on student learning outcomes has no effect. Reasons for not supporting this include the need for well-equipped university computer labs, departmental preparation for launching students' careers (internships, long-term perspectives), and student-friendly course scheduling. Experts have broadened the understanding of teacher competency, created alternative assessments, and investigated efficient methods for promoting teacher competence growth (Yang & Kaiser, 2022). They pointed out that the effect of teacher expertise on teaching effectiveness and student learning outcomes has been the subject of numerous empirical research in this area.

Hypothesis *H2b*, which supports resource quality positively impacting student satisfaction, has been accepted. The significant relation might be because university computer labs are well-equipped, happy

with the standards of the information covered in their courses, and the course satisfies their expectations regarding content and quality. Similarly, Al Mulhem (2020) found that students' Satisfaction with the quality of the e-learning system is positively and significantly impacted by quality aspects (course content, mechanism, and service excellence).

3. The impact of student involvement on student learning outcomes and student satisfaction.

The survey results indicated a negative effect between student involvement (SI) and learning outcomes (SLO). This is because achieving a high level of student engagement is essential to academic success and excellence in teaching. When student participation is weak, students are less likely to retain valuable information. Suppose they feel their lessons could be more attractive, applicable, and relevant. In that case, this directly affects poor student learning outcomes, as well as an adverse effect between student involvement (SI) and student satisfaction (SS). Because the lack of student participation significantly affects their Satisfaction, as when he is not satisfied with what the institution offers him in terms of services, educational lessons, and technology because of its weakness and not giving them enough space to create and improve their scientific abilities, and thus in a way that these results were reflected in the low percentage of student satisfaction. This research suggests that university courses can be looked at to improve the quality of their material. As previous studies conducted by Wekerle et al. (2022) show that there is a positive relationship between student involvement (SI) and student learning outcomes (SLO), also Memon et al. (2022) conducted a study between student involvement (SI) and student satisfaction (SS), and it showed a positive relationship. However, hypotheses H3a, students' involvement has a positive effect on student learning outcomes, and H3b, students' involvement has a positive effect on student satisfaction, have been rejected. The reason for not supporting the relation might be because students fail to complete assignments assigned in class, their lack of interest in learning more, their negative opinions of the department and courses, and their lack of efforts to integrate into university culture and social life could all be contributing factors. However, Taghizadeh and Hajhosseini (2021) found that online teachers need to receive training to improve their knowledge, abilities, and techniques necessary for teaching online because the quality of their instruction was determined to be higher than that of interaction and attitude.

5. CONCLUSION

The main objective of this study is to clarify the impact of the quality of education and support the quality of resources as well as student participation on student learning outcomes and their Satisfaction because students are considered the basis for the success of any educational institution. Therefore, student satisfaction must be achieved for the institution's progress and development.

It is essential for students' learning outcomes and their Satisfaction with the services provided by educational institutions, as the support services surrounding students have been considered necessary by researchers in academic institutions; the services they provide keep pace with modern learning environments. Also, the quality of education in each institution distinguishes it and sets it apart from other educational institutions.

The data of this study were collected from 180 male and female students from the College of Economics, Administration, and Information Systems at the University of Nizwa, and a focus was placed on this category to obtain accurate results.

The partial least squares approach, employed in this study's data analysis using the PLS-SEM tool, helps to better understand and clarify how the variables connect, as with the PLS-SEM program, which provides accurate and clear explanations of the conclusions.

This result indicates that education quality (EQ) has a positive impact on student satisfaction (SS), supporting the finding that there is a relationship between education quality (EQ) and student satisfaction (SS). The support resource quality (SRQ) has a favorable impact on student satisfaction (SS); the findings demonstrated that the support resource quality (SEQ) affects student satisfaction (SS). The outcome demonstrated that educational quality (EQ) did not impact students' learning outcomes (SLO). This study showed that student participation (SI) had no impact on student learning outcomes (SLO) and that educational quality did not affect students' learning outcomes.

Implications

This study's theoretical contribution to high-quality education suggests that educational institutions should prioritize improving the learning environment for students. It emphasizes the value of efficient instruction strategies, current curricula, and interesting learning materials. Metacognition and self-regulated learning are crucial, so a strong emphasis is on assisting students in developing them. It recommends that educators support pupils in creating methods for comprehending and remembering information.

Given practical implications, this research shows the value of ongoing development and adaptation in educational institutions by giving teachers tools to enhance the curriculum. Educators should actively update and improve the curriculum to reflect modern pedagogical trends and use cutting-edge instructional strategies. Additionally, it highlights the importance of individualized instruction while promoting various teaching strategies and respecting individual variations. Finally, to enhance student experiences and maintain their competitive edge, colleges should constantly evaluate and improve their facilities, services, and pedagogical procedures.

Limitations and future research directions

Since only one educational institution was examined, it may be challenging to extrapolate the results to other institutions with diverse settings, cultures, and resources. The particular qualities of the University of Nizwa's College of Economics, Management, and Information Systems may impact the outcomes. The study used the PLS-SEM tool and the partial least squares methodology for data analysis. Although this strategy offers some advantages, alternative statistical methods and research tools may produce different results.

The effect of educational quality and support resources on student satisfaction and learning outcomes can be better understood by combining quantitative and qualitative research approaches. A deeper understanding of the experiences and viewpoints of students and educators can be gained via qualitative data. The elements contributing to the variances in education quality, support resources, student involvement, and student outcomes can be clarified by conducting comparative studies across various educational institutions, regions, or nations. Additional variables and characteristics, such as teaching styles, assessment techniques, peer relationships, institutional culture, and socioeconomic issues, may affect student satisfaction and learning results in future studies.

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