

A Study on Factors Affecting the Electronic Service Quality in Higher Education in Light of Covid-19 Pandemic from Students Perspectives

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Abstract

The study is to investigate the factors that influence the Electronic Service Quality (E-service quality) in higher education institutions in light of Covid-19 Pandemic. Constant development in service quality has become one of the most essential goals for many organizations, institutions in various industries, and for diverse reasons. The COVID-19 pandemic is affecting schools, students, teachers and parents. Education is the major factor in determining the growth of a country, and the changes that will affect the country's development are expected from higher education institutions. Higher education institutions have become global businesses, which must always look for new methods to improve the quality of services. The service quality improvement and development is critically essential issue for organizations, particularly higher education institutions, to satisfy the students' needs for better educational environment that contribute to the achievement of their satisfaction. The service quality improvement and development is critically essential issue for organizations, particularly higher education institutions, to satisfy the students' needs for better educational environment that contribute to the achievement of their satisfaction. Educational institutions like universities and other organizations in the business sector, are recognizing the need to adopt technologies to measure service quality. However, they identified five main dimensions for service quality, including reliability, responsiveness, tangibility, assurance, and empathy that capture access and understanding the customer.

Keywords: E-Service Quality, COVID – 19, Technology, Students, Higher Education

Introduction

Constant development in Electronic service quality has become one of the most essential goals for many organizations, institutions in various industries, and for diverse reasons. The current study's primary goal is to investigate the factors influencing electronic service quality in Saudi Arabia's higher education in light of COVID-19 from the perspective of students. Attention to service quality has recently increased throughout the Globe because of technological changes and the spread of using the Internet. As suggested by (Hasbullah et al., 2018) and (Al-Kasasbeh et al., 2011) education is the major factor in determining the growth of a country, and the changes that will affect the country's development are expected from higher education institutions. Higher education institutions have become global businesses, which must always look for new methods to improve the quality of services. the service quality improvement and development is critically essential issue for organizations, particularly higher education institutions, to satisfy the students' needs for better educational environment that contribute to the achievement of their satisfaction (Green & Adekanmbi et al., 2014) and (Twum & Peprah., 2020). (Alhazmi., 2020) argued that universities, like other organiza-

tions in the business sector, are recognizing the need to adopt technologies to measure service quality. Higher educational institutions require a variety of information detailing the quality of their different academic and administrative service, to be able to prioritize resource allocation, and effectively promote marketing and promotion plans that include canvassing students as the chief consumers of educational services.

Methodology

Method of data collection

There are various methods used for data collection. Among the most important methods in the survey questionnaire, observation, interviews... etc (Kothari, 2004). In the current research to obtain the data required to achieve the research objectives, the researcher constructs a survey questionnaire to be addressed to the target sample of the study (Mishra & Alok, 2019). To construct the questionnaire method, the researchers depends on the literature reviewed. In this study, to achieve this main objective, and other objectives, the inductive quantitative research approach and the survey questionnaire method were used to collect the primary data from the students who participated in the study. When addressing the survey questionnaire to the target sample through Google form, the researcher has been able to receive around (207) responses out of the target sample of (362), which comprised about 57% of the total sample. To analyze the data collected, suitable statistical techniques have been used like as Percentage Analysis, Correlation Analysis, Likert Scale, Reliability Analysis, T test, ANOVAs and Cronbach's Alpha Coefficient. The statistical techniques include both descriptive and inferential statistical tools.

Purpose of the study

The purpose of this study is to investigate the main factors that affect electronic service quality in higher education in the Kingdom of Saudi Arabia from the students' perspectives, in light of the COVID-19 pandemic.

Research model

Based on what previously mentioned in regards to factors affecting electronic service quality in higher education institutions in the Kingdom of Saudi Arabia, in light of COVID-19 pandemic, the conceptual framework is formed as follows:

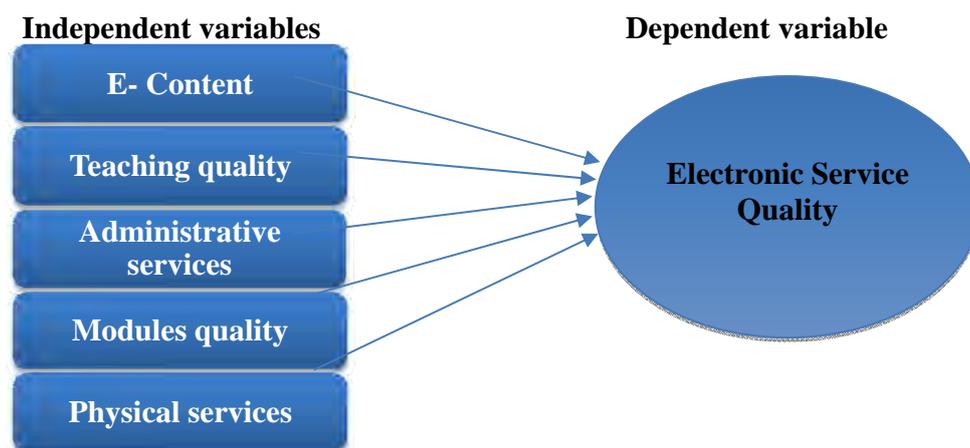


Figure 1. Research Model

Based on the previous research model, the current research hypotheses will be formulated as follows:

Hypothesis of the study

H1. There is a significant association between e-service quality and factors relating to quality of teaching in higher education institutions.

H2. E-service quality is positively associated with factors relating to the e-content.

H3. E-service quality is correlated positively with the factors relating to administrative support in the university.

H4. E-service quality positively related to modules quality in higher education institutions.

H5. E-service quality is positively associated with physical services in higher education institutions.

Results and Discussion

Participants demographic characteristics

The study participants are described on the basis of their gender, age, the academic degree they pursue, and whether they use e-learning or not. The results are shown in table 1 below:

Table 1. Participants' demographic characteristics

1. Gender	Frequency	Percentage %
Male	40	19.3
Female	167	80.7
2. Students distribution by age		
18-20	31	15.0
21-23	40	19.3
24years or above	136	65.7
3. Academic degree pursued		
Diploma	15	7.2
Bachelor	70	33.8
Master	85	41.1
PhD	37	17.9
4. Using of E-learning before		
Yes	184	88.9
No	23	11.1

The results in table 1 illustrate the students participating in the study according to their gender; the female participants comprised the majority by 80.7%, while male participants represent 19.3%. Whereas, in regards to students' distribution by age, the majority of them, representing 65.7% were at the age class 24 years or above, 19.3% at the age group 21-23 years, and 15.0% at the first age category 18-20 years old.

In addition to that, the students' distribution according to the academic degree pursued reveal that the students pursued Master's degree comprised the majority by 41.1%, Bachelor degree 33.8%, PhD represent 17.9, whereas those pursue diploma represent 7.2%.

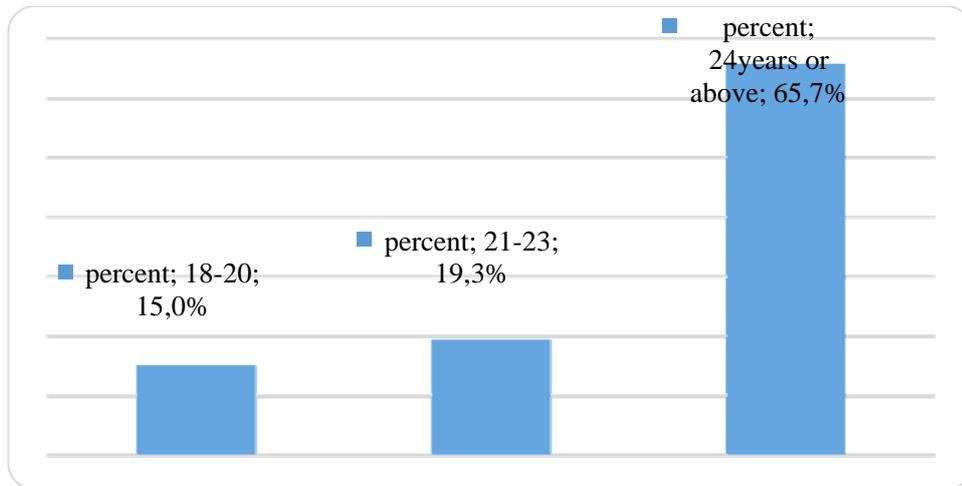


Figure 2. Distribution of students according to their ages

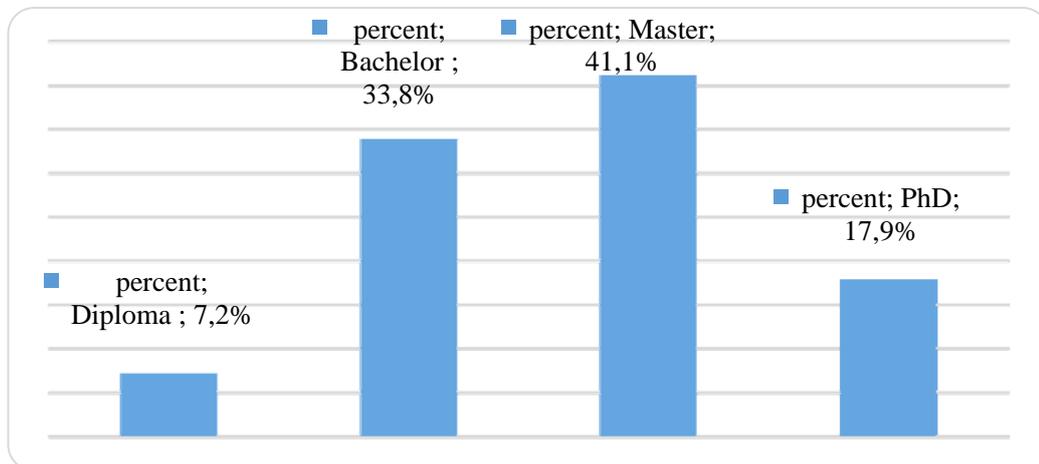


Figure 3. Students' distribution according to academic degree pursued

With regards to distribution of students as per their previous use of e-learning, the results display that the majority of students (88.9%) confirmed that they use e-learning before, while only 11.1% claimed that they have no previous experience of e-learning. The assessment of students' perceptions in regards to the factors affecting the use of e-service quality in higher education was built on the basis of five-points scale as presented in table.2 below:

Table 2. Assessment of students' perceptions towards factors influencing e-service quality

Mean range	Assessment
1-to ≤ 1.80	Strongly disagree
1.80-to ≤ 2.60	Disagree
2.60-to ≤ 3.40	Neutral /moderate
3.40-to ≤ 4.20	Agree
4.20-to ≤ 5.00	Strongly agree

Factors that influence e-service quality in higher education:

This section of data analysis main aim is to solicit information and provide statistical evidences in order to understand the factors influencing e-service quality in higher education institutions. The e-service quality dimensions included in the analysis consist of five factors: (E-content, quality of teaching, administrative services, modules quality, and physical services) (Hernandez, et al., 2009, and Bhowmik & Bhattacharya 2021). The results of the analysis of participants' perspectives regarding these constructs will be illustrated as in the coming tables:

Table 3. Students' perspectives in relation to e-content as a factor influences e-service quality in higher education institutions

Course content	Strongly disagree	disagree	Neutral	Agree	Strongly disagree	Total %	Mean+Std
Proper learning materials provided in the e-learning	1	13	12	92	89	207	4.23+86
	0.5	6.3	5.8	44.4	43.0	100.0%	
The supporting modules for the content are simple to understand	2	9	31	97	68	207	4.06+0.86
	1.0	4.3	15.0	46.9	32.9	100.0%	
The course design is suitable for the e-learning	2	11	22	109	63	207	4.06+0.84
	1.0	5.3	10.6	52.7	30.4	100.0%	
Visually attractive content	4	23	56	75	49	207	3.69+1.02
	1.9	11.1	27.1	36.2	23.7	100.0%	
Sufficient class work and assignments conducted by e-learning	3	12	30	83	79	207	4.08+0.94
	1.4	5.8	14.5	40.1	38.2	100.0%	
The content of the learning course is complete and useful	3	13	34	96	61	207	3.96+0.92
	1.4	6.3	16.4	46.4	29.5	100.0%	
E-learning enhance the student in critical thinking, analysis, problem-solving	10	21	36	79	61	207	3.77+1.12
	4.8	10.1	17.4	38.2	29.5	100.0%	
Overall mean value							3.98+0.65

The above table 3 illustrates the perspectives of the students towards e-content as one of the factors that influence e-service quality in higher education institutions (Bhowmik & Bhattacharya., 2021). The results display that, the overall mean value reaching 3.98+0.65, which indicates that almost participants agree that e-content has a positive influence on the quality of e-learning in higher education institutions.

Table 4 shows the students' perspectives towards teaching quality as one of the factors that influence e-service quality in higher education institutions. The results disclose that the overall mean

value is equal 3.85+0.78, which indicates that almost participants agreed that teaching quality has a positive influence on the quality of e-learning in higher education institutions.

Table 4. Students' perspectives in relation to the impact of teaching quality on e-learning quality in higher education institutions

Teaching quality	Strongly disagree	disagree	Neutral	Agree	Strongly disagree	Total %	Mean +STD
Lecturers have knowledge in the material	1	9	31	99	67	207	4.07+0.83
	0.5	4.3	15.0	47.8	32.4	100.0%	
Lecturers method of teaching is innovative and effective	9	32	54	69	43	207	3.51+1.11
	4.3	15.5	26.1	33.3	20.8	100.0%	
Lecturers are helpful and encourage learners to learn	6	14	29	93	65	207	3.95+0.99
	2.9	6.8	14.0	44.9	31.4	100.0%	
Lecturers sessions motivate learners to read the modules	9	32	41	71	54	207	3.62+1.15
	4.3	15.5	19.8	34.3	26.1	100.0%	
Lecturers communicate well in the classroom	2	11	34	95	65	207	4.01+0.88
	1.0	5.3	16.4	45.9	31.4	100.0%	
It is easy to contact with the lecture on-line	7	19	29	89	63	207	3.88+1.05
	3.4	9.2	14.0	43.0	30.4	100.0%	
Lecturers provided effective feedback on learners performance (assignment & quiz)	6	18	29	83	71	207	3.94+1.05
	2.9	8.7	14.0	40.1	34.3	100.0%	
Lectures give appropriate academic advice and motivation to students	5	19	43	82	58	207	3.82+1.02
	2.4	9.2	20.8	39.6	28.0	100.0%	
Overall mean value							3.85+0.78

Testing of Hypothesis

Result of testing H1: stated that, "There is a significant relation between the e-service quality and the factors relating to the quality of teaching in higher education institutions"

Table 5. The relationship between e-service quality and quality of teaching in higher education institutions.

Variables	E-Service Quality	
	Pearson's correlation coefficient	P-Value (Sig.)
Teaching Quality	0.560**	0.00

**Indicated that correlation is significant at the (0.01) level.

The above Table 5 illustrates that the correlation coefficient value is reaching 0.560, which is a positive value and statistically significant at the 0.01 level. This result underscores that there is a significant relationship between e-service quality and quality of teaching in higher education institutions. This means that the quality of teaching positively influences e-service quality. Thereby, the result supports the acceptance of the first research hypothesis H1.

Result of testing H2: stated that, "E-service quality is positively associated with factors related to the e-content "

Table 6. The relationship between e-service quality and e-content

Variables	E-Service Quality	
	Pearson's correlation coefficient	P-Value (Sig.)
E-Content	0.598**	0.00

**Indicated that correlation is significant at the (0.01) level.

The above table displays that the correlation coefficient value is reaching 0.598, which is a positive value, and statistically significant at the 0.01 level. The result confirms that there is a significant relationship between e-service quality and e-content. The result also indicates that the e-content is one of the independent factors that have a positive effect on the e-service quality. Thus, the result backs the acceptance of the second research hypothesis H2.

Result of testing H3: stated that, "E-service quality is correlated positively with the factors related to administrative services in the university."

Table 7. The relationship between E-service quality and administrative services

Variables	E-Service Quality	
	Pearson's correlation coefficient	P-Value (Sig.)
Administrative service	0.526**	0.00

**Indicated that correlation is significant at the (0.01) level.

The above table 7 reveals that the correlation coefficient value is equal to 0.526, which is a positive value, and statistically significant at the 0.01 level. Accordingly, we conclude that there is a significant relationship between e-service quality and the administrative services provided in the university. The result affirms that the administrative services provided to students to join e-classes, positively impact the e-service quality in higher education institutions.

Result of testing H4: stated that, E-service quality positively related to modules quality in higher education institutions.

Table 8. Relationship between E-service quality and modules quality

Variables	E-Service Quality	
	Pearson's correlation coefficient	P-Value (Sig.)
Modules quality	0.547**	0.00

**Indicated that correlation is significant at the (0.01) level.

The above table illustrates that there is a positive and statistically significant relationship at the 0.01 level between e-service quality and modules quality. This means that modules quality has a positive influence on e-service quality in higher education institutions. Therefore, the result supports the acceptance of the study hypothesis H4.

Result of testing H5: stated that, "E-service quality is positively associated with physical services in higher education institutions".

Table 9. The relationship between E-service quality and physical services

Variables	E-Service Quality	
	Person's correlation coefficient	P-Value (Sig.)
Physical services	0.449**	0.00

**Indicated that correlation is significant at the (0.01) level.

The above table 9 discloses that there is a positive and statistically significant relationship at the 0.01 level between e-service quality and physical services quality, as Pearson's correlation coefficient is reaching 0.449. This means that physical services significantly influence e-service quality in higher education institutions. Therefore, the result supports the acceptance of the research hypothesis H5.

Result of testing H6: stated that, there are no statistically significant differences between the students' perceptions towards the factors affecting e-service quality, related to gender, age, and the academic degree pursued?

To examine the above hypothesis, T-test statistics was run to examine whether there is a significant difference between students' perception related to gender. Whereas, ANOVA has been used to examine whether there is a significant difference related to age, and academic degree pursued. Hence, these tests are shown in the following tables:

Table 10. Variations between male and female students service quality in higher education.

Factors affecting E-service quality	Gender	N	Mean	SD	T-test	Df	P-value
E-content	Male	40	3.96	0.51	-0.285	205	0.78
	Female	167	3.98	0.68			
Teaching quality	Male	40	3.69	0.82	-1.425		0.16
	Female	167	3.89	0.77			
Administrative services	Male	40	3.96	0.73	-0.555		0.58
	Female	167	4.03	0.71			
Modules quality	Male	40	3.62	0.91	-2.663		0.01
	Female	167	4.02	0.68			
Physical services	Male	40	3.60	0.88	-0.530		0.60
	Female	167	3.69	0.78			

The results in the above table reveals that the statistical significant variations only exist among students' perceptions associating with gender, towards modules quality as one of the factors influencing e-service quality in higher education institutions, and the variation is positive to the side of female students. Whilst, in regards to other factors proposed to affect e-service quality, the results disclose no statistical significant difference associated with gender. In regards to modules quality the variations between male and female students, indicates that, female's students feel that, modules quality is the most influencing factor to e-service quality in higher education. This means that, there is a need to make some revision in the design of modules quality.

- The study concludes that the most important factors associated with e-content that

positively influence the quality of e-learning in higher education institutions are the provision of proper learning materials in e-learning, sufficient classwork and assignment conducted by e-learning, in addition to the suitability of course design in e-learning.

- The study finds that lecturers' knowledge, lecturers' encouragement to students to learn, alongside lecturers' effective feedback with regards to learning performance, are the most important factors affecting the quality of e-learning in higher education.

- The study reveals that providing a suitable budget to implement e-learning, the system interactivity, as well as system requirements and proper technical support provision, are the most significant factors that positively determine the e-service quality in higher education.

- The study concludes that the factors such as delivery of teaching materials on time, writing of learning materials in a fashion way, the high quality of teaching materials, are the most important factors that support the positive influence of modules quality on e-service quality in higher education institutions.

- The results of the study demonstrate that the most important factors relating to physical service, which contributes to e-learning quality in higher education institutions, are the excellence of classroom facilities in learning center and the adequateness of facilities for students' activities.

- The results of the study confirm the existence of a positive and significant relationship between the factors including e-content, teaching quality, administrative services, modules quality, and physical services, and the quality of e-learning in higher education institutions.

- The results reveal that, among the most important factors that influence the E-service quality in higher education institutions is the administrative services, while the second factor is the E-content, whereas the third factor that influence the E-learning quality is the module quality. The results also revealed that there is statistically significant correlation relationship between the E-service quality and each of the five factors that influence E-service quality. Moreover, the results of T-test do not find any statistically significant differences in students' perspectives towards the factors that impact E-service quality related to gender of students, except module quality.

The current research main purpose is to explore the main factors that impact the electronic service quality in higher education institutions amid COVID-19 pandemic. The researcher proposed five factors that expected to influence e-learning quality including (E-content, teaching quality, administrative services, modules quality, and physical services). Based on the analysis executed with the aim of answering the research questions and testing the research hypotheses, the study concluded with a set of findings. The most important findings of the study are all the factors that positively influenced e-service quality. In practice, this determines the institution's development, staff and student's productivity and mode of service delivery as a whole (Persad, & Padayachee, 2015). The current study also concluded that there is a statistically and significant correlation relationship between e-service quality and the factors proposed to have influence on it, particularly e-content, teaching quality, administrative services, modules quality, and physical services. The factors significantly, and positively influence e-learning quality.

The results conclude that the students are most concerned about infrastructure, economic factors, university management, ICT literacy, performance expectancy, and content quality. Furthermore, the previous results also matched with the findings of a study conducted by Taha (2014), which found that student characteristics (computer skills, motivations, and self-efficacy); teacher's characteristics (attitudes, control of technology and pedagogy, and teaching style); technological (quality and effectiveness of infrastructure); design and content (perceived ease of use, quality con-

tent) influence significantly e-learning implementation. The current study reveals that, among the most important factors in connection with factors related to e-content, are the provision of proper learning materials in learning as well as sufficient class work and suitability of course design in learning (Almaiah & Alyousse, 2019). Assessing e-learning quality found that, website content is one of the factors that play a significant role in perceived e-learning quality (Hallerman, 2009), which in turn affects learners' satisfaction and future intentions to enrol in online courses. Finally, when examining whether there are statistically significant variations among student's perceptions towards factors influencing E-service quality in higher education institutions related to gender, the results reveal that, the statistical significant variations exist between male and female in regards to modules quality, and positive to the side of the female students. This result is in match with the finding concluded by (Ada, 2017) which found that there is a significant difference between male and female students in regards to the institutional academic directions, and the result is positive to the side of female students. Thus, we conclude that, using SERVQUAL models to assess the quality of e-learning quality is to continue in future in order to improve the quality of e-learning, and to attract more students to enrol in online programs of e-learning, which related to various factors in support of such type of learning in the current time, and in the future.

Research Limitations and Future Research

No doubt, any scientific research conducted is expected to counter some limitations. Limitations of the research arise from different sources, particularly in area of researching the theoretical information or collecting the data that contribute to achieving the research objectives. As the current research paper aims to examine the factors that affect e-service quality in higher education, it should focus on the literature review in regards to the application and implementation of e-learning service in higher education amidst of THE COVID-19 pandemic. Consequently, one of the most key limitation in this regard, there are no sufficient researches conducted in the field of the study, especially in the context of Saudi Arabia. However, there are some study papers conducted in other countries, but they do not investigate the factors influencing e-service quality. The second limitation is associated with sampling selection. The studies constructed an online survey method to collect the primary data from the students in higher education institution as a target sample. The response rate is usually not as required. Therefore, future researchers should pay attention to this issue. Despite the fact that e-service quality and the factors determining its implementation has been searched continuously on the context of business organizations extensively, the adoption and implementation of e-learning services in the education sectors only has been taken into consideration recently. This has arisen from the spread of COVID-19 pandemic worldwide. However, the developed countries have implemented e-learning services for many decades.

Conclusion

The current study paper is to investigate the key factors that influence the quality of e-learning in higher education institutions in the Kingdom of Saudi Arabia. To achieve this research objective and other objectives, the researcher uses the quantitative research design as an inductive approach to test the research hypotheses. The data was collected by constructing a survey questionnaire method addressed to the students taking part in the current study, who pursued different academic degrees in higher education institutions. The research concludes with a set of findings supporting the influence of the suggested factors on e-service quality in higher education institutions. The results disclose that e-content, teaching quality and modules quality are the most important factors that have a significant effect on the quality of e-learning in higher education institutions. The

study recommended that it is critically important to give more attention to the e-content through constant improvement to the teaching materials and techniques. Additionally, it is necessary to support the academic staff through creating suitable teaching environment as well as providing them with different financial and materials support to do their jobs in innovative ways.

With regards to the future work, *the* researchers have the opportunity to conduct the following proposed researches in the future:

1. A proposed model for factors influencing e-service quality in higher education institutions in the Kingdom of Saudi Arabia from the perspective of both staff members and students.
2. Factors influencing the finance of higher education, as well as exploring the experiences of the public and private universities in Saudi Arabia

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