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Students' satisfaction and learning experiences at higher agricultural education institutions in Saudi Arabia: an empirical inquest

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Aim: This study aims to explore various factors that affect students' satisfaction regarding postgraduate agricultural programs and the likelihood of recommending such programs to others.

Methods: Data were collected using structured paper-based questionnaires from a random sample of 127 students who were undertaking master and doctoral programs in eight different disciplines within agricultural sciences at King Saud University.

Results: The findings showed that majority of the students expressed high academic learning experiences and were satisfied with their program of study. Multiple regression analysis revealed that students' academic learning experience, faculty support, and the rationale for attending the university had significant positive influence on their satisfaction with the enrolled programs. Moreover, the students' satisfaction and faculty support also showed significant positive correlation with their likelihood to recommend agricultural programs to others.

Suggestions: In order to further enhance the impact of agricultural programs, we suggest improvements in the university curriculum as well as faculty services to make current agricultural programs up-to-date and relevant to meet the kingdom's national agricultural and human resource development goals. There should be a particular focus on enhancing students' research and written communication skills as postgraduate agricultural programs entail a significant component of these highly essential skills.

KEYWORDS

learning experiences, satisfaction, agricultural graduates, Saudi Arabia, agricultural graduate satisfaction learning experience

1 Introduction

Higher education is an important instrument for the socio-economic development of a country (Mukhtar et al., 2015; VolchiK et al., 2018; Chankseliani et al., 2021; Chankseliani and McCowan, 2021) by promoting its population's professional growth, personality development, skill enhancement, and problem-solving capacity. Higher education is also desirable as it instills creativity, professionalism, and policy orientation for the development of a society (Escotet, 2012). Besides, higher educational institutions are expected to focus on learners' educational desires and needs (DeShields et al., 2005). Universities, being seats of learning and illumination, are increasingly becoming an indispensable service sector where the crucial efforts are undertaken by contemplating the needs and expectations of both current and prospective students. Overall, universities are meant to produce well-equipped minds for the growth and development of a nation. The Kingdom of Saudi Arabia is striving hard to satisfy the needs and interests of students by opening new universities with diverse courses to harvest skilled human capital that could play a significant positive role in the growth and development of the country in the future (Allam and Malik, 2020).

With the growing population, Saudi agriculture is facing several challenges, such as energy crises, food insecurity, and vulnerability to climate change (Foley et al., 2011). Like other higher educational institutions, agricultural universities are greatly contributing to agricultural education, research, and extension. Agricultural institutions are on the path to generating innovative knowledge and mechanisms for improving farm production and livelihoods (Manjunath and Shashidahra, 2016). Academic programs at agricultural universities are designed to produce a pool of agri-professionals having resourcefulness and leadership abilities to solve modern agricultural issues (National Research Council, 2009; Aithal and Aithal, 2020). Skilled agricultural professionals and workforce could transform a nation's agricultural businesses by ensuring an abundant supply of food for its people and might also pave the way to sustainable utilization of natural resources.

In the Kingdom of Saudi Arabia, several higher educational institutions are currently involved in imparting agricultural knowledge and skills to the students both at undergraduate and postgraduate levels. The prominent institutes among this list include: King Saud University, King Abdulaziz University, King Faisal University, Qassim University, and King Khalid University. Along with other colleges, these institutions have dedicated colleges of agriculture, which offers a wide range of learning opportunities to the potential learners. In addition to offering degree programs, they are also actively involved in conducting agricultural research activities as the institutes have an extensive network of research chairs and centers having state-of-the-art facilities with particular focus on certain priority areas that are beneficial for the Kingdom to achieve both food security and national development. King Saud University is one of the oldest institutions of the country and have earned a prestigious position at international level for its share in education and research. The key reason for its selection for the current study is that it has a well-developed agricultural college with extensive educational resources. Unlike other higher educational institutions of the Kingdom, it is the main university that offers a diverse range of undergraduate and postgraduate level programs in several agricultural disciplines like

plant production, horticulture, forestry, plant pathology, entomology, agricultural extension, food and nutrition science, and animal sciences.

According to the university database, the majority of the students at the King Saud University are enrolled in programs other than agricultural disciplines. This may be because of a low likeliness among agri-graduates of the university to recommend its agricultural programs to others or a lack of encouragement to select agriculture as a profession. A study in the past showed that agricultural graduates of the King Saud University are less likely to recommend agricultural programs to others in their social networks (Shenaifi, 2013). Moreover, an integrated approach that has been partially adopted in the previous decade needs further introspection since the graduates coming out of agrarian institutions, colleges, universities are found to face issues in handling farm-level problems (Al-Shayaa et al., 2012; Hassen and El Bilali, 2019). Although the agrarian institutions in the Kingdom have largely addressed issues of food security, water use and land management, a major emphasis is needed to continuously address emerging issues linked with climate change, urbanization, natural resource management, and agrarian markets. Addressing these issues requires ongoing support from academic institutions linked with agriculture to effectively address challenges through imparting skills to the graduates enrolled there.

Despite a harsh climate, water scarcity, and desertification, Saudi Arabia has provided steadfast support to educational programs in pursuit of the goal of agricultural development. In the past, the Kingdom of Saudi Arabia inaugurated several academic departments and divisions to promote agricultural higher education programs. In 1965, the first agricultural college was established at King Saud University (KSU), formerly known as Riyadh University. In 1975, King Faisal University created the Faculty of Agricultural and Food Sciences. In 1981, the college of veterinary medicine was founded in Al-Ahsa. In the same year, the Faculty of Meteorology, Environment, and Arid Land was established in Jeddah. In 1982, the College of Agriculture and Veterinary Medicine was founded in Qassim (Shenaifi, 2013). One can safely assert that there is sufficient academic support for multiple academic institutions throughout the country, and the agriculture college at the KSU has a paramount significance in imparting formal education related to agriculture in the country. There are multiple reasons for such a high level of support for the KSU students, one being that it is the one of the oldest and most reputed seats of learning in the Middle East and the Kingdom. This institution also has well-established infrastructure, labor force, and reputation for effective contributions toward agricultural development. Nevertheless, aspiring graduates' opinions and feedback regarding the quality, quantity, and mechanisms can significantly pave the way toward perfection and superiority. As a starting point for addressing issues within an institution, introspection through valuing students' perception and satisfaction is a very popular tool frequently employed by educational managers, funding agencies, and policymakers (Ahea et al., 2016; Matthews et al., 2018).

Students' satisfaction can be defined as a short-term attitude resulting from an evaluation of their' educational experience, services, and facilities (Weerasinghe and Fernando, 2017; Santos et al., 2020). It can be helpful for exploring their educational experiences and perceived performance about educational services (Mukhtar et al., 2015; Cahyono et al., 2020). Students' satisfaction with their enrolled programs and with the higher education institution is a multidimensional procedure, and several factors play a role it its

determination. Personal and institutional factors typically decide their level of satisfaction. Demographic characteristics, favorite learning style, and academic performance come under personal factors, whereas institutional factors cover quality of guidance, instructors' response, clarity of expectations, and teaching styles (Appleton-Knapp and Krentler, 2006; Elshami et al., 2021). The quality of classrooms, feedback, teacher-student relationships, communication with fellow students, course content, accessible learning apparatus and materials, and library facilities also influence students' satisfaction at a higher educational institution (García-Aracil, 2009; Sojkin et al., 2012). Additionally, teaching skills, syllabus flexibility, university rank and standing, support for independence, care of the faculty, student progress, student centeredness, department climate, and social environments determine are also known to influence students' satisfaction level at a university (Palacio et al., 2002; Douglas et al., 2006; Wong and Chapman, 2023).

Students' educational achievements are the most important reasons for the existence of higher educational institutions. This optimistic development in higher education shows the importance of students' satisfaction in a competitive environment (Yusoff et al., 2015). Currently, the higher education industry is robustly affected by globalization. It has escalated the competition among higher education organizations to adopt market-driven policies to captivate students by satisfying their existing desires and expectations. Unlike other colleges of the university, a relatively lower enrollment level at the College of Food and Agriculture Sciences is a matter of concern for the university as the Kingdom plans to provide skilled workforce for all the professions from within the country instead of hiring from other countries. In addition to reducing its dependence on other nations for the procurement of skilled agricultural workers, such domestic workforce is also crucial for maintaining national food security and agricultural sustainability. The current study examined the effects of student support facilities, rationale for attending, faculty support, and academic learning experiences at King Saud University on students' satisfaction with their enrolled agricultural programs at KSU as well as their likelihood to recommend such programs to others in their social networks and circles. This is the first study of its kind in the Kingdom that targets postgraduate agricultural students and aims to explore their higher education learning experiences at one of the oldest institutions of the country. Exploring postgraduate agricultural student's experiences at the university and their rationale for attending a particular university would help the institution to assess the impact of its agricultural programs. Moreover, the findings could be used by other institutions of the country that are planning to offer research-based postgraduate agricultural programs for enhancing their relevance and impact with respect to skilled agricultural workforce and leadership.

2 Materials and methods

2.1 Survey instrument

The questionnaire was validated for constructs by a group of experts and academicians in the College of Food and Agricultural Sciences at the King Saud University. The survey was comprised of different sections aimed to collect data related to the rationale for attending the KSU, academic learning experiences, collegiality in

graduate program, faculty support, and satisfaction and likeliness to recommend the study program to others. The rationale for attending the KSU was measured using 10 items on a five-point Likert scale ranging from 1 (very unimportant) to 5 (very important). To measure the academic experiences, the graduate students were asked to write down their level of learning experiences in response to 12 statements on a five-point Likert scale ranging from 1 (very low) to 5 (very high). Similarly, collegiality in graduate student programs was measured using 14 statements on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree.) The student's satisfaction was also measured by asking them to indicate their satisfaction related to the study program. Items for satisfaction were measured on a seven-point Likert scale ranging from 1 (very dissatisfied) to 7 (very satisfied). Similarly, items for likelihood to recommend the study program were measured on a five-point Likert scale ranging from 1 (very unlikely) to 5 (very likely). The study was approved by the Research Ethics Committee of the Deanship of Graduate Studies at King Saud University (KSU-HE-23-1011).

2.2 Data collection

Data were collected from KSU only. The selection of KSU was purely made due to the diversity of postgraduate courses. Few other higher education institutions also offer agricultural programs; however, KSU is the only university that offers master's and doctoral level programs in most of the domains of agricultural sciences like agricultural economics, agricultural engineering, food and nutrition, agricultural extension, veterinary sciences, plant pathology, entomology, horticulture, plant breeding and genetics, agronomy, and forestry. Data were recorded from sampled students in the College of Food and Agriculture Sciences, at King Saud University, Riyadh, Saudi Arabia. The students were selected from eight different departments of the College of Food and Agriculture Sciences. These departments are: Agricultural Extension and Rural Sociology; Animal Production; Agricultural Engineering; Soil Science; Agricultural Economics; Food and Nutrition; Plant Protection; and Plant Production. There were about 365 students enrolled in various masters and doctoral programs in the college. For data collection, 150 students were randomly selected. A paper-based questionnaire was distributed to the selected 150 students. However, 127 students returned the completed survey questionnaire, resulting in an 85% response rate. The data collection lasted for around 12 weeks from January to March 2023.

2.3 Data analysis

Statistical Package for Social Sciences (SPSS v26) was used to analyze the survey responses. Descriptive statistical analyses were performed to determine the frequency distributions of the survey responses, their means and standard deviations. Inferential statistical analyses included Principal Component Analysis (PCA) and regression analysis. We also assessed the internal consistency of the Likert scale items that were designed to measure various facets of the academic environment, including academic learning experiences, collegiality within the department, faculty support, and the rationale for attending the institution and evaluating its facilities. To evaluate

the scale reliability, Cronbach's alpha coefficient (α) was calculated for each metric (Bonett and Wright, 2015).

The computed Cronbach's alpha values for the respective scales were as follows: 0.92 for academic learning experiences; 0.95 for collegiality within the department; 0.91 for faculty support; and 0.84 for factors relating to the decision to attend the institution or the assessment of its facilities. These values were deemed to be in the acceptable range of reliability, as they all exceeded the commonly accepted threshold of $\alpha > 0.70$.

PCA was applied to identify main questions in each construct of the scale that accounted for most of the variance in respective aspects. There are four main constructs that were measured using a 5-point Likert Scale, including rationale for attending King Saud University, students' learning experiences at KSU, collegiality in the departments, and faculty support. Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's test of Sphericity were performed to assess the suitability of the survey response data. Furthermore, multiple regression was used to assess the effects of faculty support, academic learning experiences, and rationale for attending KSU and facilities on students' satisfaction. The effects of faculty support, enrolled program, and effect of satisfaction on students' likeliness to recommend the study program to others were also measured.

3 Results

The demographic characteristics of the respondents regarding age, education, gender, nationality, and enrolled programs are presented in Table 1. In terms of age brackets, the majority of the respondents (60.6%) were below 31 years of age. About one-third (35%) of the respondents were between 32–40 years. A small percentage (4%) of the respondents were above 41 years of age. Nearly two-third (65%) of the students were enrolled in master's degree programs, whereas about 35% of them were doctoral students. The majority of the students (76%) were males, whereas around 24% of them were female students. Three-fifth (70%) of the students were Saudi citizens, while 30% of them were residents (foreign citizens). The highest number of the students were in the disciplines of Food Science (27%) and Plant Protection (23%). The departments of Agricultural Economics (3.1%) and Animal Production (3.9%) had the lowest number of the students.

To better understand students' academic experiences, collegiality in department, faculty support, and rationale for attending KSU, Principal Component Analysis (PCA) was used to group items into specific factors. Four factors were extracted using PCA, explaining about 60% of the total variance in the dataset (Table 2). Based on factor loading values, Factor 1 consisted of six items: (1) design research projects; (2) effectively interpret and analyze new knowledge; (3) critique your own and others' ideas using scientific method principles; (4) propose new ideas and solutions in your field or discipline; (5) describe other fields or disciplines as they may relate to your work; and (6) explain ideas, solutions, products or reports to an audience during an oral presentation. Factor 2 consisted of seven items: (1) respect each other's interests; (2) demonstrate willingness to assist one another; (3) care about each other's welfare; (4) listen to different opinions; (5) department climate; (6) communicate respect toward those with diverse background; and (7) promote an environment where the achievement of common goals is valued. Factor 3 included three items: (1) availability of course offerings; (2) faculty advising; and (3) faculty monitoring. Factor 4 contained two items: (1) quality of KSU; and (2) quality of the program.

The most important factors that positively influenced students' learning experiences include their ability to design research projects, effective analysis and interpretation of new knowledge, critical analysis of scientific ideas, ability to propose new ideas and solutions relevant to their fields and apply multidisciplinary approaches, and good oral communication skills. The students' collegiality in the departments was positively influenced by their capacity to respect interests and values of each other depending on their diverse cultural backgrounds as well as a caring attitude toward others' welfare, willingness to cooperate with each other and tolerate difference of opinion among colleagues, and the culture of promoting an environment of achieving common goals with respect. Availability of course offerings, advisory services as well as monitory services offered by the faculty members had a positive influence on the students' perception of faculty support at the KSU. The key factors that influenced the students' decision to study at King Saud University include overall quality of the university as an institution and also the quality of its academic programs.

The rationale for attending KSU for graduate education is summarized in Table 3. The findings depicted that approximately half of the students (49%) reported that the availability of online classes was important or very important. The opportunity to conduct research was also important or very important for a vast majority (82%) of the

TABLE 1 Demographic characteristics of the respondents.

Variables	Frequency	Percentage
<i>Age</i>		
23–31 years old	77	60.6
32–40 years old	45	35.4
41–49 years old	5	3.9
<i>Degree level</i>		
Master's	83	65.4
PhD	44	34.6
<i>Gender</i>		
Male	97	76.4
Females	30	23.6
<i>Nationality</i>		
Non-Saudi	38	29.9
Saudi	89	70.1
<i>Enrolled programs</i>		
Agricultural extension and rural sociology	12	9.4
Animal production	5	3.9
Agricultural engineering	15	11.8
Soil science	10	7.9
Agricultural economics	4	3.1
Food and nutrition	34	26.8
Plant protection	29	22.8
Plant production	18	14.2

TABLE 2 Principal component analysis.

Factors	Items	Factor loading value
Factor 1 (6)	Design research projects	0.785
*V = 19.81%	Effectively interpret and analyze new knowledge	0.796
**α = 0.92	Critique your own and others' ideas using scientific method principles	0.785
	Propose new ideas and solutions in your field or discipline	0.747
	Describe other fields or disciplines as they may relate to your work	0.758
	Explain ideas, solutions, products, or reports to an audience during an oral presentation	0.781
Factor 2 (7)	Respect each other's interests	0.853
*V = 18.69%	Demonstrate willingness to assist one another	0.794
**α = 0.95	Care about each other's welfare	0.768
	Listen to different opinions	0.748
	Department climate	0.728
	Communicate respect toward those with diverse background	0.728
	Promote an environment where the achievement of common goals is valued	0.714
Factor 3 (3)	Availability of course offering	0.735
*V = 11.89%	Faculty advising	0.712
**α = 0.91	Faculty monitoring	0.710
Factor 4 (2)	Quality of KSU	0.837
*V = 9.68%	Quality of program	0.765
**α = 0.84		

*Variance explained by factor. **Cronbach's alpha for reliability testing. Factor 1 = Academic learning experiences, Factor 2 = Collegiality in department, Factor 3 = Faculty support, and Factor 4 = Rationale for attending KSU.

students. Two-third (66%) of them expressed that the opportunity to work with a specific faculty member was also of significant importance. Another factor that was important for attending KSU was the availability of research facilities (77%). About 61% of the students reported that amount of funding was another factor for their selection of KSU. Similarly, availability of funds was also thought important by

about 64% of the students. An overwhelming majority (88%) of the students indicated that the quality of KSU as a university was a significant reason for selecting KSU as a higher educational institution. About four-fifth (81%) of the students also considered quality of the program as an important factor for attending KSU. Around 38% of the students expressed that family consideration by the university was also important, although over two-fifth (42%) of them indicated that consideration in this regard was unimportant.

The students' academic learning experiences and their ability to perform academic tasks are summarized in Table 4. The majority of the students (68%) reported positive learning experience with performing work-related tasks in the laboratory or community to carry out their research, and about 72% reported positive learning experience with explaining key concepts in their discipline. Nearly three-fifth (59%) of them indicated high experiences about designing research projects. About 54% of the students mentioned that they had moderate or less positive experiences with describing other disciplines' relationships with their own field or discipline. Most of the students (68%) also reported high experiences with the use of interpersonal skills to work in collaboration. In terms of engaging and mobilizing the capacities of others, about 67% indicated high experiences. About 55% expressed positive experience with written communication with others; however, nearly 45% expressed moderate or less positive experience in this regard. Over two-third (67%) had high experiences with expressing their ideas to other people using oral presentation skills. Around 64% of the students reported positive experiences with effective interpretation and analysis of new knowledge in their respective fields. Over half (54%) of the students also reported positive experience with critical evaluation of one's own ideas as well as others' ideas using scientific methods. However, about 46% reported moderate to low experiences in this regard. Nearly two-third (65%) of them had positive experiences in proposing new ideas and solutions to problems. A vast majority (81%) expressed positive experiences demonstrating respect for those who have diverse backgrounds.

The findings about collegiality in the department are summarized in Table 5. The majority of the students agreed with the following items about the collegiality practices in their respective programs of study: supporting a collegial department climate (74%); promoting an environment where the achievement of common goals is valued (73.2%); communicating respect toward those with diverse backgrounds (80.3%); celebrating success (56.7%); listening to differing opinions (74.8%); caring about each other's welfare (74%); respecting each other's interests (76.4%); demonstrating a willingness to assist one another (71.6%); breadth of curriculum (63%); availability of course offerings (63.8%); faculty advising (64.6%); faculty mentoring (63.7%); access to confidence if a problem arises (70.8%); and graduate student support (67%).

Multiple regression analysis was performed to inspect the effect of the predictive variables of academic learning experiences, faculty support, rationale for attending KSU, and facilities for students on students' satisfaction (dependent variable). The findings of the multiple regression are shown in Table 6. A simultaneous regression method was used in this regard. The *F* test value was obtained as 29.07, with a *p*-value less than 0.05 ($p < 0.05$), indicating that the regression model is suitable for the analysis, and the correlation between predictors and criterion variable existed that could be used to predict student's satisfaction level. The value of the coefficient of determination (R^2) was estimated to be around 0.415. It means that 41% of the

TABLE 3 Rationale for attending KSU for graduate education.

Statements	Very unimportant	Unimportant	Moderate	Important	Very important	Mean	SD
	%	%	%	%	%		
Availability of online classes	9.4	19.7	22.0	27.6	21.3	3.31	1.27
Opportunity to conduct research	3.1	3.9	9.4	30.7	52.8	4.26	1.00
Opportunity to work with a specific faculty member	5.5	7.1	21.3	33.1	33.1	3.81	1.13
Research facilities	5.5	6.3	11.0	33.9	43.3	4.03	1.14
Spouse or family consideration	22.8	18.9	20.5	22.0	15.7	2.89	1.39
Geographic location	9.4	12.6	22.0	39.4	16.5	3.41	1.18
Amount of funding	6.3	7.9	25.2	31.5	29.1	3.69	1.15
Availability of funding	3.1	5.5	27.6	31.5	32.3	3.84	1.04
Quality of KSU	3.1	2.4	6.3	32.3	55.9	4.35	0.93
Quality of the program	4.7	3.9	11.0	33.9	46.5	4.13	1.07

variation in students' satisfaction level could be explained by the predictor variables, such as academic learning experiences, faculty support and rationale for attending KSU, and facilities to students. The Durbin–Watson test was also run to examine the independence of residuals (lack of serial correlation between residuals or error). The value of this analysis was obtained to be around 1.86, which is in the acceptable range (1.5 to 2.5). The beta value (0.215) regarding “academic learning experiences” indicates that the change in predictor by one unit would bring about the change in the “students' satisfaction” by 0.215 units. The beta value (0.50) regarding “faculty support” indicates that a change in the predictor by one unit would bring about a change in the “students' satisfaction” by 0.50 units. Furthermore, the beta value is positive for both the predictor variables, which indicates a positive relationship between independent and dependent variables. This means that an increase in learning experiences and faculty support with courses and curriculum would increase students' satisfaction.

Multiple regression analysis was performed to determine the effect of the predictive variables (students' satisfaction, enrolled programs, and faculty support) on the dependent variable (students' likeliness to recommend the university program to others). The findings of the analysis are presented in Table 7. A simultaneous regression method was used in this regard. The *F*-test value was estimated to be around 46.86 at the significance level of 0.05 ($p < 0.05$), which means that the regression model is suitable. The value of the coefficient of determination (R^2) was calculated to be around 0.533. It means that about 53% of the variation in the students' likeliness to recommend the study program could be explained by their satisfaction level, program of enrollment, and faculty support. The Durbin–Watson test was also run to examine the independence of residuals (lack of serial correlation between residuals or error). The value of the test statistic was obtained to be 1.81, which is in the acceptable range

(1.5 to 2.5). The beta value (0.251) regarding “students' satisfaction” indicates that a change in the predictor by one unit would bring about a change in the “students' likeliness to recommend to others” by 0.251 units. The beta value of faculty support (0.557) predicts that a change in the predictor by one unit would bring about a change in the “students' likeliness to recommend to others” by 0.557 units. Furthermore, the beta value is positive, which indicates a positive relationship between independent and dependent variables. This means that an increase in faculty support and students' satisfaction would increase the students' likeliness to recommend a program to others.

The students are categorized into three categories regarding their satisfaction related to their program of study as shown in Figure 1. The majority of the students (64%) were highly satisfied. On the other hand, about 21% of the students were those who were not satisfied with their program of study.

Figure 2 depicts the students' likeliness to recommend the study program to others in their social networks. About 75% of the students were highly likely to recommend the study program to others. Nearly 13% of the students were those who would be less likely to go for the recommendation of the study program.

4 Discussion

The findings indicate that academic learning experiences and faculty support have significant and positive effects on students' satisfaction with their enrolled academic programs in agricultural sciences. These results are in line with Umbach and Porter (2002), who concluded that faculty support for students has a significant effect on their satisfaction. Faculty support, such as teaching methods, faculty facilities, environment, and services are directly or indirectly

TABLE 4 Academic learning experiences, and students' ability to perform academic activities.

Statements	Very low	Low	Moderate	High	Very high	Mean	SD
	%	%	%	%	%		
Perform work-related tasks in the laboratory or community to carry out your research	7.9	6.3	17.3	45.7	22.8	3.69	1.13
Explain key concepts in your discipline	4.7	5.5	18.1	44.9	26.8	3.83	1.03
Design research projects	5.5	5.5	29.9	37.0	22.0	3.65	1.05
Describe other fields or disciplines as they may relate to your work.	4.7	11.0	37.8	37.8	8.7	3.35	0.95
Use interpersonal skills to work collaboratively.	3.1	7.9	21.3	47.2	20.5	3.74	0.97
Engage and mobilize the capacities of others.	3.9	4.7	24.4	40.9	26.0	3.80	1.00
Make your meaning clear to others in writing.	3.9	7.9	33.1	36.2	18.9	3.58	1.01
Explain ideas, solutions, products or reports to an audience during and oral presentation.	3.9	6.3	22.8	46.5	20.5	3.73	0.98
Effectively interpret and analyze new knowledge.	3.9	7.9	24.4	44.9	18.9	3.67	1.00
Critique your own and others' ideas using scientific method principles	7.1	7.1	32.3	33.9	19.7	3.52	1.10
Propose new ideas and solutions in your field or discipline.	6.3	4.7	23.6	40.9	24.4	3.72	1.08
people with different cultural or ethnic backgrounds	3.9	1.6	13.4	40.9	40.2	4.12	0.97

controlled by faculty members at higher education institutions. These services have the potential to shape students' academic learning experiences at universities, and in turn can affect their satisfaction with their programs of study (Navarro et al., 2005; Mihanović et al., 2016). In a similar context, Khan and Yildiz (2020) found that the quality of faculty members significantly affected the reputation of the institute and enhanced students' satisfaction. In contrast, a study conducted in the business college of Prince Sattam Bin Abdulaziz University in the KSA showed that faculty support for students is a powerful predictor of academic success that leads to increased satisfaction (Allam and Malik, 2020). Globally, including Saudi Arabia, several researchers seem convinced that faculty support in terms of teaching methods, good interaction with students, faculty guidance, and their mentoring services have an effect on students' satisfaction.

The findings are also consistent with the results of Martirosyan (2015), who found that reasonable curriculum and faculty support are major determinants of students' satisfaction. Therefore, it is suggested that faculty should be well equipped with innovative teaching

technologies, skills, abilities, knowledge, and helpfulness strategies (Rode et al., 2005; Yusoff et al., 2015). Faculty members should carefully include every kind of institutional support factors that can improve students' satisfaction as well as university growth and development (Kakada et al., 2019). The positive learning experiences of students could build their long-term learning abilities. Through good learning experiences, students engage profoundly with education and are inspired to think with clarity and induces curiosity about any subject area.

Our findings are consistent with Yusoff et al. (2015), who identified 12 variables that predicted students' satisfaction. Among all variables, academic learning experiences showed a significant effect on student satisfaction. When students' satisfaction increased along with academic learning experience, they shared their satisfaction among friends, relatives, prospective students, and other interested parties. Student satisfaction improved loyalty levels and other students gained motivation to join academic programs (Weerasinghe and Fernando, 2017). Therefore, it is suggested that students' learning

TABLE 5 Collegiality in graduate students' program of study, and adequacy of student support.

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	SD
Department climate	3.9	3.9	18.1	43.3	30.7	3.93	1.00
Promote an environment where the achievement of common goals is valued	4.7	6.3	15.7	43.3	29.9	3.87	1.06
Communicate respect toward those with diverse backgrounds	3.9	3.1	12.6	36.2	44.1	4.13	1.01
Celebrate success	5.5	7.9	29.9	33.9	22.8	3.61	1.09
Listen to differing opinions	3.9	1.6	19.7	44.9	29.9	3.95	0.95
Care about each other's welfare	4.7	4.7	16.5	43.3	30.7	3.91	1.04
Respect each other's interests	4.7	4.7	14.2	44.1	32.3	3.94	1.04
Demonstrate a willingness to assist one another	3.9	4.7	19.7	43.3	28.3	3.87	1.00
Breadth of curriculum	8.7	8.7	19.7	44.1	18.9	3.56	1.15
Availability of course offering	7.9	10.2	18.1	38.6	25.2	3.63	1.19
Faculty advising	9.4	2.4	23.6	31.5	33.1	3.76	1.21
Faculty mentoring	11.8	3.9	20.5	29.1	34.6	3.71	1.30
Access to confidence if a problem arises	8.7	6.3	14.2	41.7	29.1	3.76	1.19
Graduate student support	10.2	6.3	16.5	33.9	33.1	3.73	1.26

TABLE 6 Multiple regression analysis for predicting the students' satisfaction based on academic learning experiences, faculty support and facilities to students, and rationale for attending KSU.

Criterion	R	R ²	Predictors	Unstandardized coefficients		Standardized coefficients	t	Sig
				B	Std error	Beta		
Student satisfaction	0.644	0.415	Academic learning experiences	0.101	0.039	0.215	2.560	0.012
			Faculty support	0.180	0.032	0.500	5.646	0.000
			Facilities for students or rationale for attending KSU	0.000	0.035	0.000	-0.004	0.997

F=29.07, R²=0.415, and DW=1.86.

experiences should be improved by providing them with modern academic facilities, research learning facilities, and research funding.

The application of innovative learning methods in higher education institutes stimulates student satisfaction (Hepplestone et al., 2011). Versatile academic and research facilities should be accessible to students; otherwise, the lack of it can negatively influence their learning experiences (Belanger and Jordan, 2000). Moreover, students involved in the survey were more likely to prefer modern academic facilities, research facilities, and research funding. The students'

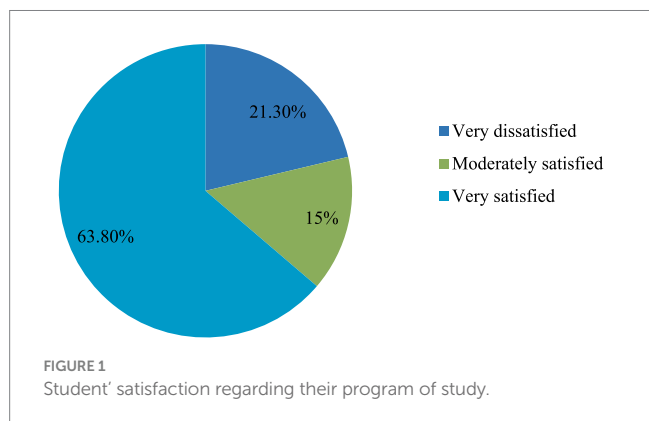
academic learning experiences are affected by the teaching-learning environment. Furthermore, teaching method, course contents, curriculum, workload, and teacher efficiency determined the learning environment. It is understandable that improvement in the learning environment enhances learning experience in return, and improves students' satisfaction (Karagiannopoulou and Christodoulides, 2005).

The findings indicate that students' satisfaction and faculty support have an effect on their likelihood to recommend programs to others. The current results are consistent with Shelton (2003) that

TABLE 7 Multiple regression analysis for predicting the students' likeliness to recommend the study program to others based on students' satisfaction, enrolled program, and faculty support.

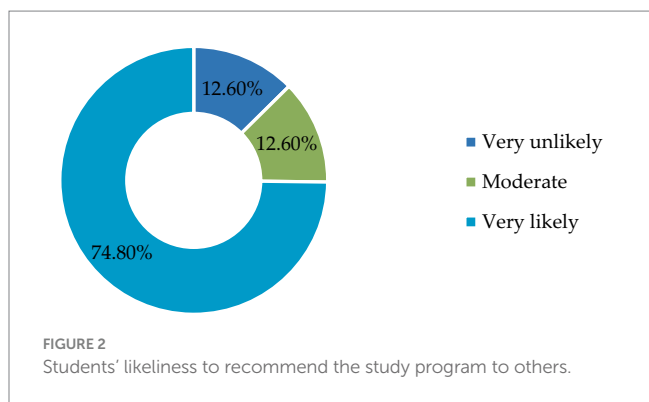
Criterion	R	R ²	Predictors	Unstandardized coefficients		Standardized coefficients	t	p-value
				B	Std error	Beta		
Students' likeliness to recommend others	0.730	0.533	Students' satisfaction	0.214	0.065	0.251	3.275	0.001
			Enrolled programs	0.027	0.020	0.084	1.335	0.184
			Faculty support	0.342	0.046	0.557	7.365	0.000

F = 46.86, R² = 0.53, and DW = 1.81.



between student's satisfaction and negative word-of-mouth. Thus, higher satisfaction among students improves positive word-of-mouth.

It is understandable that positive word-of-mouth improves students' likelihood to recommend study programs to others (Harrison-Walker, 2014). This finding is consistent with the theory of confirmation and disconfirmation (Usman and Mohd Mokhtar, 2016). Also, Elliott and Healy (2001) and Abbott and Ali (2009) have similar opinions in this regard. In a similar context, Elliott and Healy (2001) suggested improvements in faculty support and services. That way, students with high satisfaction and faculty support would recommend the study program to others. Satisfied students become more active learners, which leads to improved student engagement, academic learning, and outcomes.



5 Conclusion

The current study provides an understanding of the factors that influence students' satisfaction and likeliness to recommend a study program to others. Besides overall quality of a potential institution and its academic programs, significant factors that may influence postgraduate students' decision to join a higher educational institution for master's and doctoral programs include diversity of courses and curriculum breadth, availability of online classes, substantial research resources and funding opportunities to carry out research activities. Several factors that shape students' academic learning experiences at an institution include improved ability to comprehend the key concepts of a subject and its application to solve practical problems, development of interpersonal skills and resourcefulness to work in collaboration with other people having diverse cultural backgrounds to achieve common goals. As postgraduate programs involve a significant component of research and writing, the academic staff needs to focus on the development of these essential skills in students, one core area which presents a significant scope for improvement. One possible way to accomplish it is to make amendments to the postgraduate curriculum, especially agricultural academic programs. A review of the current curriculum in practice shows that little importance is given to cultivate analytical and written communication skills in agricultural students. Improvements in these skills will not only enhance students' academic experiences at the university, but it will also increase their problem-solving capabilities. Moreover, continuous professional development of the faculty members and supporting staff is also highly desirable. The effectiveness of the curriculum and relevance of the agricultural academic programs is considerably dependent on their ability to deliver the curriculum and

students who experienced faculty support was more likely to persist throughout a study program and motivate other students to join the program of study. Our results showed similarities with Mihanović et al. (2016), who found that faculty support to students in terms of advanced teaching methods, faculty services, provision of learning materials, effective student-teacher interactions, improved satisfaction affect students' likelihood to recommend study programs to others. Moreover, our findings are also in accord with Danjuma and Rasli (2012), who reported that students' satisfaction with faculty support is necessary for keeping them at the related academic program as well as for their recommendations of the program to future students. Therefore, it is suggested that faculties must become more competitive. It is essential that institutes should invest in knowledge, for example, in teacher training, teaching methods, faculty facilities, and other techniques. Kahai and Cooper (2003) found a clear relationship

be responsive to their students' needs. One of the limitations of the study is that it was limited to master and doctoral students in College of Food and Agriculture Sciences at KSU. Future research could also involve students who are enrolled in undergraduate programs both in agriculture college and other colleges of the university to have an in-depth understanding of the underlying factors that affect students' satisfaction with universities educational services. If higher educational institutions of the country envisage a plan to improve the impact of their academic program, they should consider these factors to design their academic programs, especially for postgraduate students. By doing so, they could improve students' academic learning experiences at an institution, which in turn may influence their decisions to recommend an institution to their colleagues for prospective studies.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by the Research Ethics Committee of the Deanship of Graduate Studies at King Saud University (KSU-HE-23-1011). The study was conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

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