Students' satisfaction with the service quality of academic advising systems

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Article Info

ABSTRACT

Academic advising (AA) is an integral part of university education, as it has an indispensable role in helping students fulfil their goals in higher education, become responsible for their own learning, and formulate meaningful educational plans that perfectly match the abilities of each student. For this reason, educational institutions around the world are striving to upgrade their AA systems (AAS) to provide their students with personalized experiences. Meanwhile, modern technology can improve the advising process and facilitate the accomplishment of the corresponding tasks. Therefore, the integration of technology into AA not only offers more flexibility for the students but also improves the delivery of advising services. This study aimed i) to identify those factors that mainly affect the AAS services being offered in universities; and ii) to examine how the satisfaction of students with AAS is affected by service quality. A total of 400 students from the Information Technology College of Al-Hussein Bin Talal University (AHU) were invited to participate in an online survey for data collection, and a response rate of 90.50% was recorded. Results show that the satisfaction of students with the AAS is affected by trust, network quality, service quality, system quality, information quality, and perceived risk.

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1. INTRODUCTION

To foster the capabilities of students in making effective academic plans, choosing courses that suit them best and addressing any difficulties in their academic journey, universities all over the world have started implementing academic advising (AA) systems, which assign each student to an advisor at the beginning of the academic year. Collaborations between students and their advisors are crucial in formulating an effective long-term academic plan that lists all the classes that a student should take before his/her graduation. Whilst the construction of AA systems (AAS) requires much effort and specialisation [1], [2], they have been proven to contribute to the academic success, graduation and retention rates, loyalty and satisfaction of students [3].

Jordan has recently witnessed a surge in demand for higher education. In response to such demand, higher education institutions in the country need to improve their AAS to retain their students as much as possible and guide them throughout their academic journey. However, some universities in Jordan, including the Al-Hussein Bin Talal University (AHU), do not offer such system, hence resulting in students choosing poor academic schedules. The onset of the COVID-19 pandemic has exacerbated such problem, which left many students unable to plan out their academic schedules due to mobility restrictions that greatly limit the amount of support they receive from their advisors. In addition, their universities lack an electronic system that guide the effective planning of academic schedules. Without this system, some students may decide to switch

to another major after eventually realising that they do not fit well with the major they initially selected, hence increasing the costs that their parents had to pay for their children's education [4]. In addition, whilst the COVID-19 pandemic popularised the use of information technologies (e.g. Chatbot, Collaborate, Zoom and MS Teams) to facilitate student learning outside physical classrooms, such technologies were not explored by some academic institutions in Jordan, including AHU [2], [5]. Moreover, students without any skills in computers inevitably face challenges in their online learning and AA [6].

This paper explores those factors that influence the satisfaction of students in Jordan with their universities' AAS, which are supposed to help them build their knowledge levels as much as possible and overcome any hurdles they may face throughout their academic journey. Results of this work are expected to aid university decision makers in understanding those factors that largely shape the quality of their AA services and in formulating strategies that would boost the satisfaction of students with these services. These results may also have some implications related to student retention and graduation rates. To collect data for this work, undergraduate students at the AHU were selected as respondents of a questionnaire survey. Therefore, the results of this work are particularly relevant to the AHU's goals to improve its AA methods and to provide its students with the necessary guidance [2].

The rest of this paper is structured as follows. Section 2 reviews the literature on student AA and AAS. Section 3 presents the theoretical model and proposes the research hypotheses. Section 4 discusses the research design and methodology. Section 5 analyses the data and presents the results. Section 6 concludes the paper.

2. LITERATURE REVIEW

2.1. Academic advising

Students, especially those who are nearing their graduation, turn to AA to interact with and seek support from their advisors. Apart from linking these students to their supervisors, AA also allows the former reflect on their ambitions and desired educational pathways, enhances their higher-order thinking skills and helps them understand their institutional systems [7]. With increasing attention from scholars, AA is developing into a discipline and a career path [8]. Although scholars have strived to identify an overarching theory of AA, not a single one of their proposed theories or approaches was considered a cut above the rest [9], with each theory or approach having a different set of strengths and weaknesses [10]. Related studies on AA can be found across diverse fields, including education, sociology, philosophy and psychology. Studies from the US have often used the term 'approaches', whereas those from the UK have mostly resorted to the term 'models' [11]. The key terms 'developmental' and 'prescriptive', which were introduced in seminal articles [12], [13], were eventually identified as core elements of the AA practice [14]. Between these elements, the developmental approach focuses on the development of students, helping them foster personalised and rewarding relationships with their advisors. As a result, the developmental approach is highly preferred by students [15]. This approach views the student–advisor partnership as a shared responsibility in educational discovery [16]. Such a partnership is built on the rapport between the two parties, which eventually leads to trust. Students mostly adopt the developmental approach to determine their goals in life and career, identify those courses and programmes that best suit them and create a workable schedule [13].

Before the developmental approach was introduced by Crookston to AA, students mainly preferred adopting the prescriptive approach [17], through which they received information directly from their advisors about the administrative aspect of their academic journey. This approach is especially popular amongst those students who are unwilling to participate in multiple counselling sessions with their advisors as it provides them all the information they need in one go [18]. The prescriptive approach is widely adopted by incoming college freshmen, whose main goal in their first semester was to select which programme to take; in the following semesters, these students start to adopt the developmental approach [19], [20]. This study considers both the developmental and prescriptive approaches in building an innovative model that supports students who are uncertain about which programmes should they take in university. The College of Information Technology at AHU was selected as the research site.

2.2. Academic advising system

Electronic counselling for university students has attracted much scholarly attention [16], [17], [21], [22], with most scholars attempting to create electronic AAS from traditional paper-based advice [22]. The ultimate goal of an AAS is to ensure that students would choose the programmes and subjects that are aligned with their respective specialisations and study plans [23]. Due to the differences in the regulations implemented by universities, building a universally applicable AAS becomes a difficult endeavour [13], [21], [24]-[26]. Accordingly, an AAS should be specific to a certain country or university.

Researchers have attempted to develop an AAS that guides students when registering for their university programmes. Two models have often been used in the literature. In the advisor-centred model,

students could only rely on the recommendations of their advisors when registering for a university programme. However, this model has been criticised for its lack of flexibility and interactivity. Meanwhile, the advisor- and student-centred model allows students to freely choose their subjects whilst taking the suggestions of their advisors into account [1], [26], [27]. A prototype AAS comprises two categories, namely, academic rules/regulations of universities and preferences of students. A student would initially indicate his/her preferences, and then these preferences will be compared by the system with the registration rules and regulations set out by the university. However, when formulating suggestions, this prototype does not take into account the previous preferences of students [28].

3. THEORETICAL MODEL AND HYPOTHESES

The satisfaction of users with new technologies have been measured in the literature by using several variables. This study is guided by the information systems (IS) success model of De Lone and Mc Lean, which posits that the satisfaction of users with the system is affected by the presence of high-quality information, systems, and services [29]. The behaviour of users with such technologies is also affected by their intention to use, which in turn is shaped by their satisfaction [30]. As can be seen in Figure 1, the IS success model highlights the net benefits from the increased usage of IS [29]. User trust is a key measure of AAS success [31], whereas networking quality [32] and perceived risk [33] are regarded as key measures of ASS quality, especially in the context of higher education institutions. This study then develops a new model based on the results of the literature review and the IS success model [27] as illustrated in Figure 2.
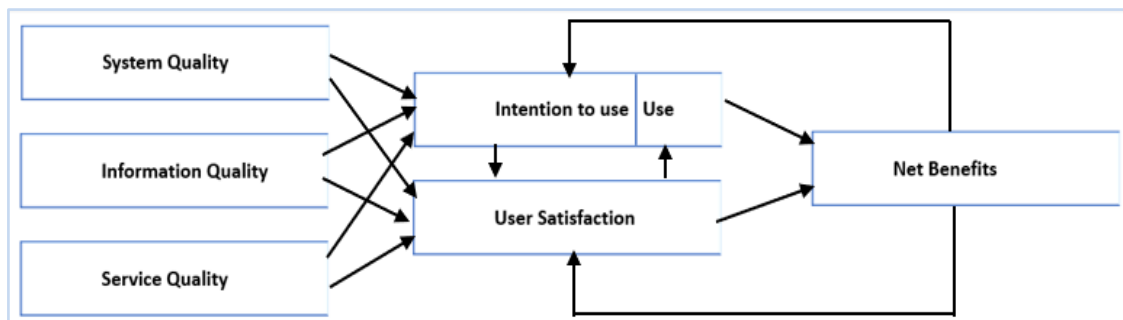

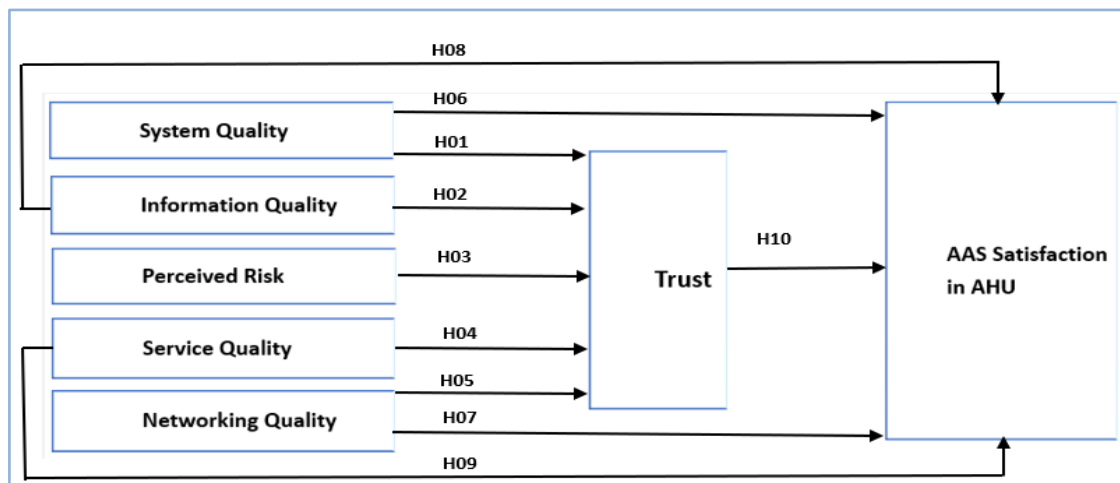Figure 1. Information systems success model [29]

Figure 2. Proposed model

Using the above model, this study tests the following hypotheses regarding those factors that predict the satisfaction of users with AAS at the AHU:

H_{01}: The trust of AHU students in the AA process is not positively influenced by the system quality (SYSQ) of AAS.

H_{02}: The trust of AHU students in the AA process is not positively influenced by the information quality (IQ) of AAS.

H_{03}: The trust of AHU students in the AA process is not positively influenced by the perceived risk (PR) of AAS.

H_{04}: The trust of AHU students in the AA process is not positively influenced by the service quality (SQ) of AAS.

H_{05}: The trust of AHU students in the AA process is not positively influenced by the networking quality (NQ) of AAS.

H_{06}: The satisfaction of AHU students with the AAS is not positively influenced by its SYSQ.

H_{07}: The satisfaction of AHU students with the AAS is not positively influenced by its NQ.

H_{08}: The satisfaction of AHU students with the AAS is not positively influenced by its IQ.

H_{09}: The satisfaction of AHU students with the AAS is not positively influenced by its SQ.

H_{10}: The satisfaction of AHU students with the AAS is not positively influenced by their trust in this system.

4. RESEARCH DESIGN AND METHOD

To collect the data, the selected students from the Information Technology College at the AHU were invited to join a Microsoft Teams group, where the link to the online questionnaire was also posted. The Computer and Information Technology Center at the AHU provided the email addresses and other information of these participants. The items in the questionnaire were built based on the results of the literature review, and some questions adopted from the literature were modified to suit the present research context. This survey aimed to understand how service quality can influence the satisfaction of students with their AAS. The variables and instruments used in this study are presented in Table 1.

Table 1. Research variables and instruments

Variables	Item No.	Source
SYSQ	7	[27] [28]
IQ	9	[27] [28]
PR	5	[31]
SQ	25	[27]
NQ	5	[30]
Trust	6	[29]
Satisfaction	6	[30]

The reliability and validity of the questionnaire survey were ensured through several procedures. Firstly, the research team invited a team of language experts to translate the questionnaire into Arabic and to verify whether the items in the original and translated questionnaires had equivalent meanings. Secondly, the research team consulted with two IS specialists and an academic advisor from the IT faculty to test the content validity of the items. Thirdly, the contents of the questionnaire were modified based on the feedback collected from these experts.

To test its reliability and validity, the modified questionnaire was then piloted amongst 25 students from the IT College of the university. The questionnaire items were then modified based on the pilot study results. A total of 63 items were eventually retained in the questionnaire. The participants were asked to rate their level of agreement or disagreement with each statement on a five-point Likert scale, with 1 indicating 'strongly disagree' and 5 indicating 'strongly agree' as shown in Table 2.

Table 2. Five-point likert scale

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	2	3	4	5

A Cronbach's alpha test was then performed to further evaluate the reliability of the questionnaire. A Cronbach's alpha coefficient (α) of 85.71 was obtained, thereby supporting the high reliability of the instrument. Table 3 presents the mean scores of the respondents divided into 5 levels. The survey was conducted from the first week of February 2022 to the last week of March 2022 amongst students of the IT College at AHU. Amongst the 400 distributed questionnaires, 362 were returned, yielding a 90.50% response rate.

Table 3. Descriptive levels of the mean scores

Level	Mean scores
Very Low	0.0 – 1.49
Low	1.50 – 2.49
Medium	2.50 – 3.49
High	3.50 – 4.49
Very High	4.50 – 5.00

5. DATA ANALYSIS AND RESULTS

The demographic profiles of the respondents were analysed via SPSS software version 25.0, it is used to determine indicators of influence, association, or differences between data sets using an ANOVA analysis and regression correlation analysis. The data were examined, the model measurements were validated, and the structural components of the model were confirmed via structural equation modelling (SEM) and partial least squares (PLS).

5.1. Demographic characteristics

After excluding those questionnaires with invalid or incomplete responses, 362 questionnaires were retained for the analysis. Table 4 presents the age, gender, academic year, and specialisation of the participants. The majority of the sample comprised males (281 or 77.62%), people aged between 18 and 30 years (93.65%) and students in their first year of study (185 or 51.11%). In terms of specialisation, 33.70% were studying SE, 29.56% were taking up CS, 20.99% were specialising CIS and 15.75% were studying AI. The low percentage for AI can be ascribed to the fact that this programme was only introduced in 2021.

Table 4. Characteristics of the participants

Characteristics	Frequency	Percent (%)
Age		
18-30	339	93.65
31-40	16	4.42
-50	7	1.93
Over 50	0	0.0
Gender		
Male	281	77.62
Female	81	22.38
Academic Year		
First Year	185	51.11
Second Year	84	23.20
Third Year	45	12.43
Fourth Year	39	10.77
Fifth Year	9	2.49
Specialisation		
CS	107	29.56
CIS	76	20.99
SE	122	33.70
AI	57	15.75

5.2. Measurement of validity and reliability

The reliability and validity of the measurements were measured using several criteria, including Cronbach's alpha (> 0.70), composite reliability (CR; > 0.70), average variance extracted (AVE; ≥ 0.50) [34]. The indexes presented in Table 5 all reach acceptable levels. To assess discriminant validity, the correlations between constructs were compared with the square roots of AVE [35]. The criteria suggest that each construct has reached an acceptable level of discriminant validity. Therefore, the collected dataset was deemed suitable for further analyses.

Table 5. Validity and reliability

Variables	CR	AVE	Factor loading	R2	Cronbach's α
SYSQ	0.82	0.73	0.83-0.91	NA	0.83
IQ	0.87	0.84	0.77-0.85	NA	0.87
PR	0.84	0.82	0.86-0.90	NA	0.83
SQ	0.79	0.77	0.74-0.92	NA	0.80
NQ	0.85	0.83	0.85-0.91	NA	0.86
Trust	0.85	0.89	0.81-0.89	0.128	0.85
Satisfaction	0.88	0.86	0.91-0.94	0.552	0.89

5.3. Hypothesis testing

After validating the proposed model with observed data, its null hypotheses were tested. The hypothetical relationships between the constructs were evaluated by using standardised paths. All null hypotheses were rejected in the PLS. Moreover, the relationship between satisfaction and the PR variables is moderated by trust, thereby suggesting that PR indirectly affects satisfaction but directly affects trust. Each of the tested variables demonstrated a positive and significant effect, thereby rejecting all hypotheses. Table 6 presents the hypotheses testing results.

Table 6. Hypotheses test results

Hypotheses	Standardised coefficient (β)	SE (P)	Support
$H_0 1$	0.531*	0.016	No
$H_0 2$	0.443*	0.035	No
$H_0 3$	0.462*	0.005	No
$H_0 4$	0.346*	0.027	No
$H_0 5$	0.478*	0.018	No
$H_0 6$	0.455*	0.000	No
$H_0 7$	0.354*	0.014	No
$H_0 8$	0.571*	0.008	No
$H_0 9$	0.499*	0.005	No
H10	0.623*	0.009	No

*$P < 0.001$

In detail, trust in the AA process was significantly influenced by the SYSQ (H_{01}, standardised coefficient $\beta = 0.531$, $p < 0.016$), IQ (H_{02}, standardised coefficient $\beta = 0.443$, $p < 0.035$), PR (H_{03}, standardised coefficient $\beta = 0.462$, $p < 0.005$), SQ (H_{04}, standardised coefficient $\beta = 0.346$, $p < 0.027$) and network quality of AAS (H_{05}, standardised coefficient $\beta = 0.478$, $p < 0.018$). In addition, SYSQ (H_{06}, standardised coefficient $\beta = 0.455$, $p = 0.000$) was positively related to network quality (H_{07}, standardised coefficient $\beta = 0.354$, $p = 0.014$), IQ (H_08, standardised coefficient $\beta = 0.571$, $p = 0.008$), SQ (H_{09}, standardised coefficient $\beta = 0.499$, $p = 0.005$) and trust (H_{10}, standardised coefficient $\beta = 0.623$, $p = 0.009$) of AAS. All these variables also positively influenced the satisfaction of IT students at AHU with the AAS. Some variances were observed amongst the constructs related to satisfaction with AAS, thereby suggesting that the sequential dependent variable, namely, AAS satisfaction, has an explanatory power of 84.6%, which means that the proposed model can provide a statistically significant explanation for AA satisfaction.

6. CONCLUSION

An essential part of university education, AAS helps students overcome their academic problems whilst simultaneously increasing their satisfaction and loyalty to the university. The integration of technology into AAS results in service and flexibility enhancements. However, AAS still has a very limited implementation in the AHU despite the many benefits it can offer, such as short-time and low-cost registration, broad network access and easy data processing. This study aims to identify those factors with the greatest contribution to AAS adoption and satisfaction amongst IT students in AHU. To this end, this study built an innovative model that helps students choose which courses they should take during their semester at the university. This model adopted several factors identified from the literature review as well as several new factors to determine how they affect the satisfaction of students with AAS. A total of 362 students from the IT College at the AHU were invited to empirically evaluate the proposed model. The results highlighted SYSQ, IQ, SQ, network quality, perceived risk and trust as those factors that improve the satisfaction of students with AAS. The proposed model was also proven valuable for explaining the reasons behind the success of AAS. Therefore, decision makers, students and academic advisors may greatly benefit from the findings of this study, particularly when formulating AAS implementation guidelines. Future studies should consider evaluating student counselling problems and creating an electronic advising system that helps students plan their academic schedules and choose the best programs whilst relying on automated decision support systems. Scholars may also consider expanding the sample by including students from other universities in Jordan.

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