

Digital Transformation and Sustainable Higher Education: Determinants of Student Adoption of the Unified Online Admission Platform (QUBOOL) in Saudi Arabia

Abdullah Muzil Alharbi^{1*} Mona Muzil Alharbi¹ Aymen Ochi¹ Hassan Tantaway Farrag²

1. University of Hafr Al Batin, Hafar Al Batin, Saudi Arabia

2. Ain Shams University, Cairo, Egypt

* E-mail of the corresponding author: amharbi@uhb.edu.sa

Abstract

This study examines Saudi students' perceptions and behavioral intentions toward the online admission system "QUBOOL", introduced in 2025 to streamline the university application process. A quantitative research design was employed, with data collected from university students in Saudi Arabia. The collected data were analyzed using AMOS to assess key constructs derived from the Unified Theory of Acceptance and Use of Technology UTAUT-2, including Performance Expectancy, Effort Expectancy, Social Influence, Hedonic Motivation, and Habit to Use. The findings revealed that Performance Expectancy and Effort Expectancy exert a significant positive influence on students' behavioral intention to use the QUBOOL system. In addition, Social Influence, Hedonic Motivation, and Habit were also found to positively affect students' intention to adopt the system. The results further revealed that Perceived Security significantly affects behavioral intention, but it does not directly influence actual system use. Furthermore, a significant relationship was identified between Behavioral Intention and Actual Use, highlighting the important role of intention as a predictor of technology adoption. The study contributes to the expanding literature on technology adoption in higher education and provides practical insights for policymakers and universities seeking to enhance the effectiveness as well as user acceptance of centralized admission platforms. Future research could extend these findings by incorporating samples from multiple universities and employing longer-term longitudinal research designs to better understand how students' perceptions, intentions, and usage behaviors evolve over time.

Keywords: Saudi Vision 2030; UTAUT-2; QUBOOL; Online Admission System; Technology Adoption; Behavioral Intention; Higher Education

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1. Introduction

The higher education sector in Saudi Arabia is undergoing a substantial transformation in alignment with Saudi Vision 2030, which seeks to diversify the national economy and promote the development of a knowledge-based society through digital innovation. The Ministry of Education has invested heavily in technology-enabled learning environments and prioritized digital transformation through initiatives such as the *Madrasati* and *Rawdati* platforms. These efforts have expanded the national digital learning infrastructure and received international recognition from UNESCO for the governance of e-learning and digital education (Ministry of Education, 2023). Furthermore, the National eLearning Center has introduced national frameworks to support the integration of artificial intelligence into digital learning. These frameworks aim to enhance educational quality, promote innovation, and align digital education with the objectives of Vision 2030 (National eLearning Center, 2023). The e-learning market in Saudi Arabia was valued at approximately USD 2.4 billion in 2024 and is projected to grow at a compound annual growth rate of 12.7%, reaching nearly USD 7 billion by 2033 (IMARC Group, 2023). At the same time, Saudi universities are increasingly aligning their curricula with the needs of the digital economy. They emphasize competencies in information technology, artificial intelligence, cybersecurity, and data analytics while strengthening partnerships and workforce-oriented initiatives under the Human Capability Development Program and the National eLearning Center (National eLearning Center, 2023; Saudi Vision 2030, 2026). This transformation is improving access to flexible and personalized education while supporting national goals of innovation, sustainability, and economic diversification. As higher education continues to evolve, universities must respond to rapid technological advances, changing labor market demands, and sustainable development priorities. Therefore, the continuous modernization of higher education institutions has become essential to ensuring their effectiveness, competitiveness, and long-term contribution to achieving the objectives of Saudi Vision 2030 (Alharbi et al., 2026).

The integration of online systems in Saudi higher education institutions has emerged as key element of education delivery, largely driven by the digital transformation initiatives promoted under Saudi Vision 2030. Studies show that Saudi universities have turned to e-learning platforms and Learning Management Systems (LMS) such as Blackboard to facilitate blended and entirely online courses, besides providing learners with flexibility and access to non-conventional (Walabe & Luppigini, 2020). Research indicates that approximately 75% of curriculum in higher education institutions, such as the Saudi Electronic University, is delivered online, while the remaining portion requires physical attendance. This structure enables the implementation of a hybrid learning model capable of accommodating diverse student needs (Alshathri, 2016). These systems have enhanced student interaction and learning by providing access to educational services anytime and anywhere (Walabe & Luppigini, 2020). Online learning technologies are closely associated with student acceptance and satisfaction. In research models, perceived ease of use and usefulness have been identified as significant predictors of user satisfaction, jointly explaining more than half of the variance in positive attitudes towards the adoption of online learning technologies (Alqahtani et al., 2022). The COVID-19 pandemic further intensified the use of online learning, forcing institutions to expedite the conversion of courses to online delivery. Nevertheless, the transition exposed several challenges, including inadequate internet connectivity in some regions and lack of digital literacy among users (Alkabaa, 2022). Notwithstanding these limitations, online learning systems have enhanced access for women and remote learners, supporting the national goals of Saudi Arabia in fostering inclusive education (Asif et al., 2022; Aldosemani et al., 2024). The growing adoption of these systems supports the strategic goal of the Saudi Vision 2030, which seek to transform the higher education sector, improve the quality of education, and prepare students with the competencies required for a technology-driven labor market.

Online admission systems have become critical elements in managing applications within Saudi higher education institutions, providing a more efficient, transparent, and streamlined process for both students and the universities. Studies indicate that most of the Saudi universities utilize a centralized online admission portal managed by the Ministry of Education. Applicants provide their academic credentials via the portal, then they are categorized based on their grades across multiple stages of admission process, thereby determining both their eligibility and the allocation of programs (Alotaibi et al., 2021). The system minimizes duplication by enabling applicants to submit a single application accepted by all universities, enhancing equity in resource distribution and alleviating inefficiencies, including redundant applications and administrative delays (Ministry of Education, 2025). In addition, these online platforms incorporate Decision Support Systems (DSS) to facilitate evidence-based admission decisions and to enhance the allocation of seats according to applicants' merit and institutional capacity (Alotaibi et al., 2021). Findings from empirical research show that online admission systems can enhance applicants' satisfaction by offering real-time updates on application progress and significantly shortening processing times (Malalha, 2023). Nevertheless, notwithstanding these developments, persistent issues continue to exist, particularly regarding the integration of university databases and the improvement of system security (Malalha, 2023). The shift toward online admissions is closely associated with the digital transformation initiatives of the Saudi Vision 2030, which seek to improve efficiency, promote transparency, and ensure inclusive access within higher education sector (Saudi Vision 2030, 2026; Ministry of Education, 2025).

UTAUT2 framework has been utilized in numerous studies to investigate the factors affecting the adoption of online applications among higher education students. While UTAUT2 provides valuable insights into behavioral intentions associated with technology adoption, the unique context of university online admission systems requires additional empirical exploration. Such necessity stems from ongoing challenges, notably the insufficient knowledge regarding the cultural, infrastructural, and psychosocial specificities within Saudi higher education that may influence actual usage, event in presence of strong behavioral intention (Dwivedi et al., 2019; Alqahtani et al., 2022). Moreover, additional factors - including system usability, digital literacy gap, network reliability, and real-time support - have not been fully incorporated into UTAUT2-based models, which primarily focus on general technology acceptance rather than the critical context of online admission. Furthermore, online admissions are inherently more intricate than standard learning management systems due to the involvement of multiple stakeholders, the requirement for data verification, and the integration of decision support features, highlighting the need for a specialized framework to examine the barriers and enablers within this environment (Alotaibi et al., 2021). In the light of these deficiencies, further research is necessary to extend UTAUT2 to account for the multifaceted challenges associated with the online admissions systems, thereby enabling a more comprehensive and equitable evaluation of their implementation in Saudi universities.

In order to address the difficulties encountered by applicants and alleviate stress during the university admissions, the Kingdom of Saudi Arabia implemented a centralized online admission platform, known as "QUBOOL" on June 3, 2025. This online admissions platform was launched to harmonize and simplify the application procedures in all government-run universities in the Kingdom, providing students with a centralized

system to apply, monitor their applications and receive timely updates (Ministry of Education, Saudi Arabia, 2025). QUBOOL is linked to key government databases such as the Noor System and the Qiyas Center, enabling improved data integrity and security while minimizing redundancies and occurrence of manual error (Ministry of Education, Saudi Arabia, 2025). QUBOOL allows students to make evidence-based academic choices through access to real-time program rankings and minimum admission criteria, fostering transparency and equity in university admissions (Az, 2025). In addition, QUBOOL system has helped reduce geographical constraints in university admissions, allowing students to apply to institutions across the Kingdom without being limited by their place of residence, as was often the case under previous admissions policies. By broadening academic choices, the initiative fosters equitable opportunities for applicants and corresponds with the strategic goals of Saudi Vision 2030 to digitally transform higher education, enhancing accessibility, promoting educational equity, and increasing institutional efficiency. Through the centralization of admissions processes and the provision of real-time notifications and support, the QUBOOL system simplifies university application and constitutes a major milestone in the Kingdom's effort toward digital transformation and educational reform.

Accordingly, this study offers several contributions, most notably by providing the first empirical investigation of acceptance of the QUBOOL online admission system in the higher education context in the Kingdom of Saudi Arabia.

2. Literature Review

2.1. UTAUT-2 Use in Saudi Arabian Higher Education Learning

The UTAUT-2 has been widely applied in research on the acceptance and use of different digital learning technologies by students in Saudi Arabia, as it aims to explain the factors influencing students' adoption of such technologies. For instance, Nassuora (2012) used UTAUT to investigate the determinants of mobile learning acceptance among Saudi higher education students, identifying PE and SI as key factors. On the other hand, Alasmari and Zhang (2019) applied UTAUT to the learning technology acceptance of mobile learning in Saudi Arabia and observed that learning expectancy, effort expectancy, and social influence are significant predictors of behavioral intentions of students. And Altalhi (2021) used a modified version of the UTAUT model to examine the adoption of MOOCs in Saudi higher education institutions, thus, they shared that the attitude was a key mediating value between expectancy factors and intention. In more recent studies, Alqahtani et al. (2022) examined the technology acceptance of e-learning in Saudi students, and their findings revealed that facilitating conditions and perceived usefulness had a strong impact that influenced the level of satisfaction and intention to use online learning platforms among students. Also, Al-Mamary (2022) examined the use of LMS between Saudi under students through the prism of an extended UTAUT model and found that social and facilitating conditions are influential factors in technology adoption. All these studies confirm UTAUT2 as a reliable theoretical framework for explaining technology acceptance behaviors within the Saudi higher education, including applications in mobile learning, MOOCs, and LMS platforms.

2.2. Performance Expectancy and Behavior Intention to Use Online System QUBOOL System

Performance Expectancy (PE), one of the core constructs of the UTAUT-2 model, is defined as the extent to which an individual expects that using a particular system will improve their performance (Venkatesh et al., 2012). In the case of online admission systems, PE represents the students' perceptions that online admission systems make the application process easier and more simplified.

Previous research has analyzed PE effects on behavior intentions to use technology. For example, Yuliantie (2024), reported a positive yet non-significant effect of PE on behavioral intention, with user satisfaction acting as mediator. This finding implies that higher satisfaction with the system can bolster the intention to use it.

Within the financial technology domain, Rabaa'i (2023) investigated the connection between PE and the behavioral intention of users to use the services of FinTech. This research found that PE was an important predictor of behavioral intention, as perceived benefits were important in adopting technology. Also, Ayaz and Yanartaş (2020) conducted a study aiming at the implementation of Electronic Document Management Systems (EDMS) in education. The research has revealed that PE has a positive impact on behavioral intention, which underlines the importance of the construct in the process of adopting educational technologies. All these studies have highlighted the importance of Performance Expectancy in determining the behavioral intentions of students who intend to use online admission systems. While the magnitude of this relationship may differ across circumstances, the general outcome is consistent as students tend to utilize online admission platforms more frequently once they perceive the platform as efficient and facilitating application procedure.

2.3. Effort Expectancy and Behavior Intention to Use QUBOOL System

One important determinants university students Behavioral Intention to adopt technology, such as online admission platforms, is Effort Expectancy, which refers to the perceived ease of system use. The intentions of students to use such systems grow when they feel that they are easy to navigate and demand an insignificant amount of effort (Alotumi, 2022). There is empirical evidence on the use of the (UTAUT) model which suggests that effort expectancy has a positive impact on behavioral intention due to lessening the perceived complexity and increasing user confidence (Venkatesh et al., 2012). The literature regarding the context of higher education shows that convenience is a direct measure of students willing to use online academic tools, including mobile learning and admission apps (Moya et al., 2018; Dibra et al., 2022). Furthermore, behavioral intention mediates the association between effort expectancy and real use of the system, and highlights the point that perceived ease not only has a relationship with intention, but also actual adoption (Moya et al., 2018). Although there are reports that other variables, such as habit and HM, can have direct negative results, EE is still essential in motivating the first adoption and subsequent use of technology systems by students (Kumar & Bervell, 2019; Alotumi, 2022).

2.4. Social Influence and Behavior Intention to Use QUBOOL System

The degree to which serious individuals feel that significant other people (e.g., peers, instructors, or supervisors) expect them to adopt a technology, which is known as social influence, is a strong predictor of the behavioral intention among university students to utilize systems like admission platforms. Social influence affects the behavioral intention according to the UTAUT, which poses social pressure or has normative expectations that encourage people to live up to the perceived expectations of the group (Venkatesh et al., 2012). Empirical research in the field of higher education proves that the intentions of students to utilize the technology are stronger when they feel that influential people expect them to use the system (Alotumi, 2022; Dibra et al., 2022). In addition, social influence is often mediated by behavioral intention that suggests that social variables can reinforce the intention to use the system, and thereafter, the intention results in actual use of admission or academic platforms (Moya et al., 2018; Uwizeyemungu et al., 2024). These results underline the value of using social norms and peer pressures to improve the level of using and accepting technology among students in their academic institutions.

2.5. Hedonic Motivation and Behavior Intention to Use QUBOOL System

Hedonic motivation, or the enjoyment or pleasure of using a technology plays a very important role in determining BI to use systems like the admission platform or learning tools by the university students. Studies exploring the use of technology in higher education also tend to single out hedonic motivation as another predictor that prompts the user to continue to explore the technology despite the utilitarian gains offered by the experience (Alotumi, 2022; Kumar & Bervell, 2019). The study with the implementation of such a model as UTAUT2 and the application of other models such as the Hedonic-Motivation System Adoption Model (HMSAM) offers the enjoyment and intrinsic satisfaction users have with the new technology and increases their willingness and intention to adopt a new technology (Venkatesh et al., 2012; Al-Kfairy, 2024). Empirical evidence also indicates that performance expectancy moderates the relationship between the hedonic motivation and behavioral intention that is, users who enjoy technology tend to have intentions to use it because perceived usefulness is enhanced by fun (Lai et al., 2024). Also, gamified elements, interactive screens, and positive user experiences lead to an increase in hedonic motivation, thereby raising behavioral intention to utilize and carry on using technology in academic settings (Al-Kfairy, 2024). Therefore, it is critical to design admission systems or academic platforms in such a way that they carry pleasurable and entertaining characteristics to encourage behavioral intention among students to use them.

2.6. Behavior Intention to Use and Habit to Use QUBOOL System

The habit, which can be described as the degree to which people are prone to apply behaviors, owing to the acquired experiences, has a substantial impact on the behavioral intention displayed by university students who have to utilize online systems such as admission systems. Research indicates that the intention to continue a digital system, e.g. the university admission portal, increases significantly when a graduate develops a habit of using it (Alotumi, 2022). Habit is a powerful predictor, in many cases, it is stronger than conventional predictors such as effort expectancy or social influence, since habitual past behavior is an unconscious predictor of intentions (Bervell et al., 2022; Kumar & Bervell, 2019). Studies that use UTAUT2 models in blended learning settings point out that habit has both a direct and indirect effect on behavioral intention by strengthening enjoyment (hedonic motivation) and mediating perceptions (facilitating conditions) (Alotumi, 2022). Habitual use stimulates smooth contacts with online systems in the context of admission, leading to more confidence and desire to use it on a regular basis, making it permanent (Alotumi, 2022; Kumar & Bervell, 2019). In turn, the

ability to create habituation by enabling the use of friendly interfaces and promoting recurring work with the system is the key to improving the behavioral intentions of students to use the online admission system.

2.7. Perceived Security and Behavior Intention to Use QUBOOL System

The perception of security or feelings of users that their personal information and transactions are not compromised in the hands of unauthorized people or hackers is a determinant of the behavioral intention to use online systems, including university admissions. The confidence that students have in an admission system enhances when they view it as safe, and their fear of privacy or cybercrime diminishes, and in turn, confidence in the intention to adopt and use such a system intensifies (Ramos de Luna et al., 2023; Nguyen & Le, 2021). Extensions of technology acceptance models like UTAUT have also concluded that there is a strong positive correlation between perceived security and behavior intention mediated through trust and perceived usefulness (Quynh & Truong, 2023; Siagian et al., 2022). As an example, security issues are mentioned as significant obstacles to the implementation of technologies in the fintech and digital payment setting, and the reduction of such concerns is an effective solution to increase the readiness of users to work with these technologies (Jangir et al., 2023). Therefore, it is important to have strong security measures and make them clear to potential users in order to increase behavioral intentions of using online admission system among university students (see fig 1).

2.8. Relationship Between Intention of Use and Actual Use QUBOOL System

Behavioral intention is a conscious intention or plan by an individual to take a particular act that is to use a specific technology whereas actual use is the actual activity among utilizing a technology. Behavioral intention is a powerful and direct factor to predict actual system use in technology adoption models, such as the Technology Acceptance Model (TAM) and the (UTAUT) (Davis, 1989; Venkatesh et al., 2012). Research indicates that the greater the behavioral intention to use a technology, the more likely that individual will actually use it since intention represents the driving forces of the decision-making process of an individual (Davis, 1989). Nonetheless, the correlation is occasionally tempered by pre-existing experience with the technology, temporal consistency in intentions and facilitating conditions (Brown et al., 2010). Indicatively, studies conducted in the healthcare and educational contexts indicate that prior experience, as well as consistent intention, increase the predictive validity of behavioral intention on actual use, suggesting that behavioral intention has no full predictive validity without these mediating factors (Brown et al., 2010; Venkatesh et al., 2012). Thus, behavioral intention is a key antecedent, although it needs to be taken together with other contextual and individual differences in order to have an exhaustive understanding of its actual use of the technology.

Based on the detail literature it is hypnotized that

- H1; PE has significant relationship with BI and actual use of QUBOOL system for online admission among Saudi university Students.
- H2; EE has significant relationship with BI and actual use of QUBOOL system for online admission among Saudi university Students.
- H3; FC has significant relationship with BI and actual use of QUBOOL system for online admission among Saudi university Students.
- H4; SI has significant relationship with BI and actual use of QUBOOL system for online admission among Saudi university Students.
- H5; HM has significant relationship with BI and actual use of QUBOOL system for online admission among Saudi university Students.
- H6; HU has significant relationship with BI and actual use of QUBOOL system for online admission among Saudi university Students.
- H7; PS has significant relationship with BI and actual use of QUBOOL system for online admission among Saudi university Students.
- H8; BI of QUBOOL system for online admission among Saudi university Students is significantly related to actual use of the system.

3. Materials and Methods

3.1. Research Strategy

This study investigates students' perceptions of the QUBOOL online admission system using Unified Theory of Acceptance and Use of Technology 2 (UTAUT-2) model, which has been increasingly applied the higher education sector of Saudi Arabia. The Unified Theory of Acceptance and Use of Technology 2 (UTAUT-2) provides a comprehensive framework for identifying the determinants of technology acceptance in educational

environments, thereby serving as an appropriate theoretical foundation for studying the acceptance of the QUBOOL online admission system. The study employs a quantitative approach to investigate users' attitudes and experiences. The target population of this study comprises the initial cohort of students admitted to University of Hafr Al Batin via the QUBOOL online admissionsystem, thereby ensuring contextual relevance and precision. The study sample includes 341 male and female students, and the adequacy of this sample size was verified through statistical analysis using AMOS. AMOS. As a robust tool for Structural Equation Modeling (SEM), AMOS facilitates the assessment of sample for complex model testing by analyzing fit indices, statistical power, and parameter estimates (Cao et al., 2025; Hussain et al., 2025; Adnan et al., 2025). Accordingly, the sample size of 341 is sufficient to ensure reliable SEM analysis for testing the UTAUT-2 framework within the context admission system, allowing the study to provide valid insights into students' behavioral intentions and technology acceptance patterns. This approach aligns with prior research in Saudi higher education technology acceptance, where SEM-AMOS was applied on sample sizes between 300 and 520 participants for validation of UTAUT-2 constructs and adoption models (Alotumi, 2022; Altalhi, 2021).

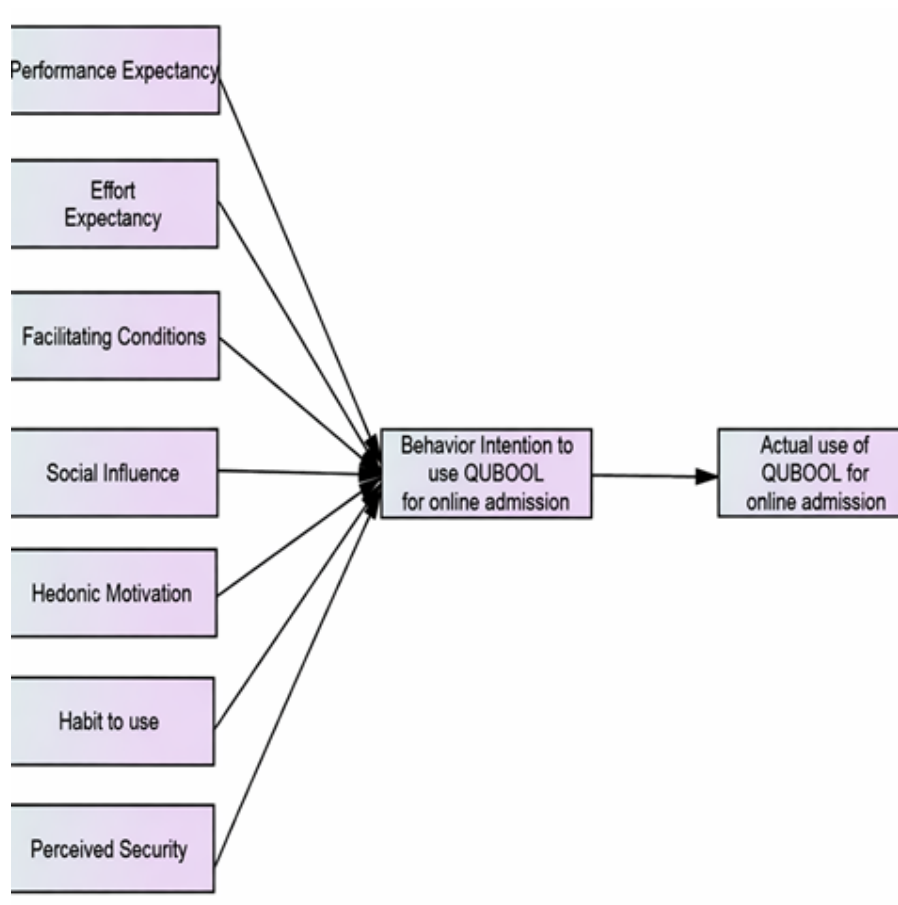


Figure 1. Proposed Model for adaptation of QUBOOL among University Students.

3.2. Measurement

In order to assess students' responses regarding the QUBOOL online admission system, this research employed a 5-point Likert scale, a widely used psychometric instrument for quantifying the levels of agreement or disagreement across items related to attitude. Responses were measured on a 5-point scale, from 1 (strongly disagree) to 5 (strongly agree), enabling a detailed assessment of participants' subjective perceptions. Measurement constructs were operationalized based on a direct adaptation of the UTAUT-2, which provides a theoretically validated extension of the original UTAUT model for understanding technology acceptance and behavioral intention within the consumer and educational settings. The UTAUT-2 model encompasses several determinants, including the Performance Expectancy, the Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value, and Habit (Venkatesh et al., 2012). The model is especially

relevant for studying technology acceptance in higher education contexts, including Saudi Arabia institutions, where these variables shape student adoption behavior (Altalhi, 2021; Alotumi, 2022).

By employing UTAUT-2 constructs in combination with a 5-point Likert scale, the study allows for the standardized and systematic measurement of students, motivational factors and challenges related to the QUBOOL online admission system. This method's reliability and validity have been demonstrated in prior research on educational technology adoption, indicating that the Likert-scale measures reliability assess the cognitive and affective components of UTAUT-2 construct (Altalhi, 2021; Saeed et al., 2024). Furthermore, the quantitative variables collected via the Likert scales were modeled using Structural Equation Modeling (SEM) in AMOS to assess the relationship among constructs and behavioral intention with statistical significance, given SEM's capacity to handle complex latent variable structures (Byrne, 2013). The integration of UTAUT-2 constructs with Likert scale measurement provides a robust methodological framework for assessing the acceptance of the QUBOOL online admission system among students, accommodating both psychometric and cultural context.

3.3. Data Analysis

The collected data were analyzed using AMOS (Analysis of Moment Structures), a prominent Structural Equation Modeling (SEM) tool that is well-suited for evaluating complex theoretical models, such as UTAUT-2 (Abbas et al., 2024; Saif et al., 2025). In the initial step of the analysis, Confirmatory Factor Analysis (CFA) was employed to examine the reliability and validity of the measurement model. CFA verified that the observed indicators consistently measured the hypothesized latent constructs of UTAUT-2, confirming that the items assessing Performance Expectancy, Effort Expectancy, Social Influence, Hedonic Motivation, Habit and Behavioral Intention, were appropriate for capturing the intended constructs.

Following the measurement model assessment, mediation models were applied to examine the mediating role of Behavioral Intention in the relationship between UTAUT-2 constructs and students' actual use behavior of the QUBOOL online admission application. Mediation analysis was used to determine whether the effect of independent variables (UTAUT-2 constructs) on the dependent variable, namely the actual use of the system, occurred indirectly through the was mediating variable of Behavioral Intention. This method aligns with well-established theory (Khan et al., 2022; Saif et al., 2024) and empirical evidence in technology acceptance studies, where Behavioral Intention is recognized as the proximal predictor of the actual usage and frequently mediates the influence of constructs such as Performance Expectancy and Social Influence (Venkatesh et al., 2012; Brusso, 2015). Through mediation effects modeling in AMOS, the study evaluated the magnitude and significance indirect relationships, highlighting how students' Behavioral Intention mediates the link between their perceptions and performance expectations regarding the QUBOOL platform and its actual utilization.

The implementation of this two-step analytical approach ensures the rigorous validation of the measurement instruments while offering a clear explanation of the causal relationships that drive technology adoption behavior. The applied analytical approaches allow the research to generate detailed insights into how various UTAUT-2 constructs influence actual system utilization through the mediating effect of Behavioral Intention among students in Saudi higher education.

4. Results

4.1. Common Method Bias Issue

To mitigate the potential effects of Common Method Variance (CMV), a time-lagged data collection design was employed (Podsakoff et al., 2003). First, respondents completed survey items measuring the UTAUT-2 constructs (Venkatesh et al., 2012). After a one-month interval, a second survey was administered to capture students' Behavioral Intention and Actual System Use (Ajzen, 1991). This temporal gap contributes to mitigating CMV by limiting the potential influence of participants' earlier responses on their later evaluation of behavioral intention and actual behavior. The method incorporates a purposeful time gap between measuring predictor and criterion variables, in accordance with methodological guidelines aimed at enhancing the validity of the study's results (Podsakoff & Organ, 1986).

4.2. Sample Size Determination

The required sample size was calculated using Thompson's (2012) sampling equation. With a target population of $N = 5,000$ students, the analysis suggested that a minimum sample of $n = 341$ participants would ensure adequate statistical precision while maintaining the generalizability of the study's results. Given the adopted design parameters, a sample size of 341 yields a maximum margin of error of approximately 5.15%,

which is consistent with standard conventions in educational and social science research and ensures the reliability of inferences drawn about the population (Thompson, 2012). In addition, the removal of geographical limitations by the QUBOOL online admission system allows the students from various regions of the Kingdom to submit applications to universities nationwide, which may enhance the geographical representativeness of the study sample.

4.3. Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was conducted to evaluate the validity and reliability of UTAUT-2 measurement model constructs for the QUBOOL online admission system. The CFA results indicated **acceptable overall fit**, with a Normed Fit Index (NFI) of 0.900 and a Comparative Fit Index (CFI) of 0.901, both surpassing the conventional threshold of 0.90 and indicating an adequate representation of the relationships among the latent constructs (Bentler, 1990). The measurement model demonstrated acceptable fit, with a Root Mean Square Error of Approximation (RMSEA) of 0.07, consistent with the guideline that values below 0.08 indicate adequate fit (Hu & Bentler, 1999). The Goodness of Fit Index (GFI) was 0.950, providing additional evidence of model adequacy (Kline, 2015). Factor loadings for each measurement items are reported in Table 1.

Table 1. Factor loadings, validity and reliability.

Construct	Item	Factor Loading	Cronbach's α	CR	AVE
Performance Expectancy	PE1	0.810	0.95	0.95	0.82
	PE2	0.973			
	PE3	0.935			
Effort Expectancy	EE1	0.792	0.89	0.89	0.68
	EE2	0.773			
	EE3	0.776			
Facilitating Conditions	FC1	0.862	0.95	0.95	0.82
	FC2	0.916			
	FC3	0.940			
Social Influence	SI1	0.856	0.90	0.90	0.76
	SI2	0.864			
	SI3	0.893			
Hedonic Motivation	HM1	0.728	0.90	0.83	0.62
	HM2	0.814			
	HM3	0.822			
Habit to Use	HU1	0.870	0.90	0.91	0.77
	HU2	0.892			
	HU3	0.876			
Perceived Security	PS1	0.934	0.93	0.94	0.83
	PS2	0.903			
	PS3	0.902			
Behavior Intention	BI1	0.960	0.97	0.97	0.91

Construct	Item	Factor Loading	Cronbach's α	CR	AVE
	BI2	0.960			
	BI3	0.946			
Actual Use	USE1	0.886	0.93	0.93	0.82
	USE2	0.916			
	USE3	0.910			

Table 1 provides insights into the factor loadings, as well as validity and reliability of the UTAUT-2 constructs within the context of the QUBOOL online admission system (see Table 1). Performance Expectancy demonstrated robust factor loadings (0.810-0.973) and high internal consistency, as evidenced by a Cronbach's alpha of 0.95, confirming its reliability (Nunnally & Bernstein, 1994). Effort Expectancy exhibited acceptable to strong factor loadings (maximum loading = 0.792) and high reliability (Cronbach's alpha = 0.89), exceeding standard criteria for internal consistency (Hair et al., 2010). Facilitating Conditions exhibited high reliability (Cronbach's alpha = 0.95), with all factor loadings satisfying established criteria for measurement adequacy (Fornell & Larcker, 1981). Both Social Influence and Habit to Use constructs displayed satisfactory factor loadings and high reliability, with Cronbach's alpha values of 0.90 for each construct (Chin, 1998).

Hedonic Motivation demonstrated adequate factor loadings and an average variance extracted (AVE) value of 0.62, exceeding the recommended benchmark of 0.50, thus providing strong evidence of convergent validity (Bagozzi & Yi, 1988). Both Behavioral Intention to Use QUBOOL and Actual Use constructs exhibited excellent reliability, with Cronbach's alpha values of 0.97 and 0.93, respectively (Schmitt, 1996). Composite reliability (CR) values for all constructs exceeded the recommended cutoff value of 0.70, further supporting the reliability of the measurement model (Hair et al., 2010).

Overall, the findings indicate strong reliability and validity across most constructs. However, Effort Expectancy and Hedonic Motivation displayed relatively lower factor loadings compared to other constructs, potentially reflecting the predominantly utilitarian orientation of an online admission system, where functional efficiency is prioritized over hedonic considerations. These observations suggest potential directions for future refinement rather than deficiencies in measurement quality (Kline, 2015).

4.4. Hypothesis Testing

Table 2. Hypothesis Testing.

Hypothesis	Path	β	S.E.	C.R.	P	Result
H1	PE $\rightarrow$ BI	0.603	0.048	7.831	***	Supported
H2	EE $\rightarrow$ BI	0.543	0.064	6.997	***	Supported
H3a	FC $\rightarrow$ BI	0.808	0.064	14.469	***	Supported
H3b	FC $\rightarrow$ USE	0.962	0.064	14.469	***	Supported
H4	SI $\rightarrow$ BI	0.779	0.052	10.183	***	Supported
H5a	HM $\rightarrow$ BI	0.906	0.046	12.784	***	Supported
H5b	HM $\rightarrow$ USE	0.866	0.046	12.784	***	Supported
H6	HU $\rightarrow$ BI	0.923	0.041	13.567	***	Supported
H7a	PS $\rightarrow$ BI	1.038	0.068	9.231	***	Supported
H7b	PS $\rightarrow$ USE	-0.125	0.193	-0.647	0.518	Not Supported
H8	BI $\rightarrow$ USE	0.230	0.057	3.456	***	Supported

Results from Table (2) indirect the direct path relationship for UTAIT-2 attributes and student behavioral intention toward QUBOOL online admission system.

Hypothesis 1: This hypothesis asserts that Expectancy is positively associated with Behavior Intention (BI) to engage with the QUBOOL online admission system. The findings reveal a significant impact ($\beta = 0.603$; $p < 0.001$), thereby confirming the hypothesis. This result indicates that the students in Saudi Arabia regard the

QUBOOL system as an advantageous to their university admission process, as it is perceived to improve their likelihood of success. Students' intention to use the system increased with their perception of its effectiveness in facilitating application process. This result is consistent with evidence from technology adoption studies, which identify perceived usefulness as a critical factor driving adoption (Venkatesh et al., 2012).

Hypothesis 2 tests the impact of the Effect Expectancy on Behavior Intention. The results indicated a statistically significant positive relationship with ($0.543; p < 0.001$), confirming thus the hypothesis (see Table 2). The Saudi students appreciate the ease of use of the QUBOOL online system, such that perceptions of ease of use are positively associated with their intention to adopt the platform. These results are consistent with the established technology acceptance literature, which identifies perceived ease of use as a critical factor influencing user adoption (Davis, 1989; Saif et al., 2025).

Hypothesis 3 asserts that FC have a positive impact on Behavior Intention and actual use of QUBOOL admission system. The findings revealed a substantial influence with ($= 0.808; p < 0.001; = 0.962; CR=0.064$ and $t=14.469$), confirming the proposed hypothesis. The results suggest that the availability of resources, such as technical assistance and adequate technological infrastructure, plays a critical role in shaping the Saudi students' intention to adopt the online admission system. Students' willingness to use the system increases as their perception of the availability of necessary support and resources improves, underscoring the critical role of external support in facilitating technology adoption (Venkatesh et al., 2012).

The relationship between Social Influence and BI is examined in Hypothesis 4. This hypothesis can be approved as the large effect found is ($= 0.779, p < 0.001$). The findings indicate that Saudi students' perceptions of the QUBOOL online system may be modeled by the influence of peers, family members and instructors. Students are more likely to develop a stronger intention to use the technology when they believe that significant individuals in their social environment endorse the system, illustrating the influence of social processes on technology perceptions (Fishbein & Ajzen, 1975).

Hypothesis 5 investigates the effect of Hedonic Motivation on students' Behavior Intention to use QUBOOL admission system. The findings show a highly significant positive effect ($0.906; p < 0.001$), thereby supporting the proposed hypothesis. These findings imply that the pleasurable and engaging experience provided by the QUBOOL online admission system increases Saudi students' intention to use the system. The pleasurable experience associated with system use appears to significantly influence the students' motivation to use online platform, aligning with theoretical perspectives that emphasize the role of intrinsic motivation in technology adoption (Ryan & Deci, 2000; Ali et al., 2024).

Hypothesis 6 examines the relationship between Habit to Use (HU) and Behavior Intention (BI). The findings indicate a substantial positive influence $0 = 0.923$ ($p < 0.001$), thereby confirming the proposed hypothesis. Habitual engagement with online procedures enhances students' familiarity and ease with such systems, thereby easing the transition to the QUBOOL admission platform, consistent with previous studies on the role of habit in technology use (Limayem & Hirt, 2003).

Hypothesis 7 examined the effect of Perceived Security (PS) on both Behavioral Intention (BI) and Actual Use (USE). The results indicate that Perceived Security has a significant and positive effect on Behavioral Intention ($\beta = 1.038, p < 0.001$), supporting the proposed relationship and highlighting the importance of security perceptions in shaping students' intentions to use the QUBOOL system (Ramos de Luna et al., 2023). However, the direct effect of Perceived Security on Actual Use was not statistically significant ($\beta = -0.125, p = 0.518$), suggesting that while security concerns influence intentions, they do not necessarily translate into sustained usage behavior in this context. While some students may express apprehension regarding data privacy and security, these concerns do not seem to impede system usage. This result underscores the significance of security perceptions in the adoption of technology platforms (Limayem & Hirt, 2003).

Hypothesis 8 states that Behavior Intention (BI) has a positive influence on the Actual Use (USE). The findings provide empirical support for the hypothesis, as evidenced by a significant effect 0.230 ($p < 0.001$, leading to its confirmation (see fig 2). These findings indicate demonstrate that Saudi students' intentions to utilize the QUBOOL online admission system are significantly associated with actual usage, confirming that behavioral intention serves as a robust predictor of user behavior. This observation is consistent with the well-established technology acceptance theories, which emphasize the pivotal role of intention in determining actual system adoption (Ajzen, 1991).

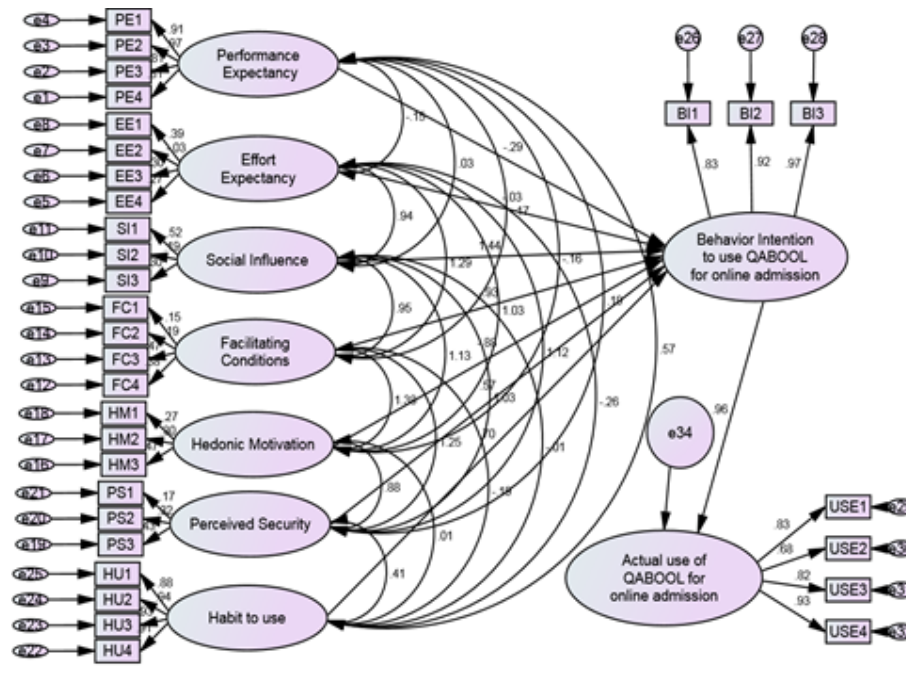


Figure 2. Path analysis through AMOS.

5. Discussion

The findings align closely with prior research on determinants of Saudi Arabian students' perceptions and behaviors toward the QUBOOL online admission system, particularly within the theoretical context of the UTAUT2 model.

The significance of Performance Expectancy (PE) in predicting Behavior Intention (BI) corroborates the previous studies suggesting that students tend to use technologies they believe will improve their performance (Venkatesh et al., 2012; Rabaa'i, 2023). The significant positive relationship indicates that students view the QUBOOL system as beneficial in simplifying the admission process, supporting the hypothesis that perceived usefulness is a key determinant of technology adoption. (Ayaz & Yanartaş, 2020). The result aligns with the findings of Yuliantie (2024), which highlighted user satisfaction as a mediating factor between PE and BI, indicating that greater system usability may further strengthen students' intention to adopt the platform. Effort Expectancy was also found to significantly influence BI, and this aligns with prior studies emphasizing the role of perceived ease of use in motivating technology adoption (Alotumi, 2022; Moya et al., 2018). Participants in this study demonstrated a clear preference for systems that are easy to navigate, consistent with the broader educational technology literature that highlights convenience as a key determinant of user engagement. The results suggest that minimizing perceived system complexity strengthens user confidence, which in turn increases the probability of technology adoption.

The results indicate that BI is also substantially affected by social factors, supporting the UTAUT model, which emphasizes the role of social influence in determining the individuals' technology adoption decision (Venkatesh et al., 2012). These results align with the findings of Alotumi (2022) and Dibra et al. (2022), who observed that influence from peers and authority figures can significantly increase students' intention to adopt technological systems. The findings indicate that the social processes and peer recommendations could serve as promising mechanisms for promoting greater usage of the QUBOOL system among students.

The positive relationship between Hedonic Motivation and Behavioral Intention (BI) confirms that pleasure and intrinsic fulfillment are important determinants in the technology adoption process (Kumar & Bervell, 2019). The results underscore the importance of designing the QUBOOL system to be both interactive and enjoyable, given that students with positive and engaging learning experience exhibit a higher willingness to use technology

(Alotumi, 2022). Relevant literature has stressed that enhancing user engagement, potentially through gamification, can play a pivotal role in optimizing the design and effectiveness of the QUBOOL system.

Habit to Use was identified as another predictor of BI, reinforcing the idea that established usage patterns can shape the future behavioral intentions (Bervell et al., 2022). The results indicate that students with established habits of using the online systems are more likely to persist in using the QUBOOL system. The result corroborates the findings of Alotumi (2022), which observed that habitual technology use fosters positive reinforcement, strengthens user confidence and promotes frequent use.

In contrast to some prior studies emphasizing security as a primary determinant of technology adoption, the findings indicate that Perceived Security significantly influences Behavioral Intention while exerting no direct effect on Actual Use. These results suggest that while students' perceived security of the QUBOOL system plays an important role in shaping their initial intentions, it does not necessarily translate into sustained usage behavior. Such a pattern may reflect a context in which security is perceived as a baseline requirement rather than a differentiating factor, particularly in government-operated systems where trust is institutionally assumed. These results are consistent with prior studies suggesting that security concerns primarily affect intention formation, whereas actual use is predominantly driven by factors such as usability, habit, and facilitating conditions (Ramos de Luna et al., 2023).

Lastly, a significant correlation is observed between Behavioral Intention and Actual Use, corroborating the assertion that behavioral intention reliably predicts actual behavior in using technology (Davis, 1989; Venkatesh et al., 2012). Nevertheless, the literature indicates that this relationship could be context-dependent based on previous experiences and enabling conditions (Brown et al., 2010). This means that although intentions are important, it is still necessary to account for additional factors, including user experience and the availability of support systems, to optimize the actual engagement with the QUBOOL system.

Overall, the results offer a comprehensive understanding of determinants influencing Saudi students' perceptions and Behavioral Intentions regarding the QUBOOL online admission system, validating established theories and outlining opportunities to optimize system convenience and user support services.

5.1. Practical Implications

Introduced in 2025, the QUBOOL online admission system constitutes a major step forward in streamlining the university application processes through digital means. Institutions of higher education should position QUBOOL as an integrated, single-point platform that consolidates various admission processes. In this way, students' stress associated with managing multiple portals can be alleviated. In addition, the provision of robust support services, including special help desks and live chat facilities, will enhance accessibility to assistance and streamline the application process.

Structured orientation sessions that familiarize students with the QUBOOL system may enhance user confidence and mitigate anxiety related to adopting a new system. Institutions should consider implementing a continuous feedback mechanism, allowing users to provide insights that facilitate the systematic and ongoing enhancement of the platform. Implementing awareness campaigns that emphasize the benefits of the QUBOOL system, along with the structured peer mentorship programs, can also provide students with guidance and assistance during the university transition process. When admissions staff are adequately trained and well acquainted with the functionality of the platform, they can deliver effective support, foster smoother and more efficient application processes for students.

5.2. Theoretical Contributions

Application of QUBOOL online admission system for Saudi students contributes to the UTAUT-2 theoretical framework by offering empirical insights into the determinants of technology adoption in higher education. The research supports the usefulness of constructs such as Performance Expectancy, Effort Expectancy, Social Influence, Hedonic Motivation, and Habit to Use. These show high applicable effects on students' intentions to use the system. The adaptation of UTAUT-2 points its suitability for new digital platforms in alignment with the Saudi Arabia Vision 2030, supporting the strategic shift to a knowledge-based economy.

In addition, the non-support of the hypothesis related to Perceived Security provides a subtle insight into technology adoption processes, indicating that users' prior familiarity with the online systems may mitigate concerns regarding security. The significant correlation between Behavioral Intention and Actual Use reinforces the widely accepted view that behavioral intention serves as a reliable predictor of user behavior in the adoption of new technologies. Moreover, the significant role of Social Influence accentuates the impact of cultural and contextual factors in shaping the students' technology adoption behavior. In general, the findings advocate for a

user-friendly methodology in crafting educational technologies, consistent with the Vision 2030 objectives of accelerating digitalization in Saudi Arabia.

5.3. Limitation of the Study

While this study provides valuable insights into Saudi students' perceptions and intentions toward the QUBOOL online admissions system by analyzing adoption factors based on the Unified Theory of Technology Acceptance and Use (UTAUT-2), certain limitations should be considered when interpreting the results.

First, the study sample was collected from students at one university in Saudi Arabia, which may restrict the generalizability of the findings to the broader population of higher education institutions in the Kingdom. Nevertheless, the QUBOOL system functions as a unified national admissions mechanism, allowing students from various regions of Saudi Arabia to submit university applications, which may contribute to some geographical diversity in the study sample.

Second, the study utilized self-reported data collected from participants. Although the measurement instruments were based on widely used and validated scales in prior literature within the UTAUT-2 framework, such data may still be subject to a certain degree of response bias.

Third, despite the use of temporal separation between measurements to reduce common method bias, the data were collected within a relatively short time frame. Accordingly, the findings reflect students' perceptions and behavioral responses during the initial stages of their interaction with the QUBOOL system. Future research could expand the sample to include participants from several universities in the Kingdom and adopt longitudinal designs to examine how students' perceptions, intentions, and usage behaviors evolve over time.

6. Conclusions

In conclusion, the study of the QUBOOL online admission system offers important insights into the determinants shaping the Saudi students' perceptions and intentions regarding this newly implemented platform. The study emphasizes the significant role of factors such as Performance Expectancy, Effort Expectancy, Social Influence, Hedonic Motivation, and Habit to Use in promoting technology adoption in higher education sector. In summary, the QUBOOL online admission system demonstrates potential to streamline university admissions, while ongoing improvements in user experience and support services will be crucial for fully realizing its future benefits.

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