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PAPER

# Mobile Technological Forecasting and its Relationship to Added Scientific Value from the Perspective of Faculty Members in Saudi Universities

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**ABSTRACT**

The current study aims to identify the degree of academic freedom practice and its relationship to the added scientific value and mobile technological forecasting from the perspective of faculty members in Saudi universities. To achieve this goal, a random sample of 23 faculty members from King Khalid University was selected from various specializations. A questionnaire was prepared to determine the extent of academic freedom exercised, the scale of scientific value added, and the scale of technological forecasting. The mean, standard deviation, and linear regression analyses were also used to analyze the research results. The results revealed that faculty members' practice of academic freedom was average, while scientific value added and technological forecasting were high. The results also indicated the potential to predict the exercise of academic freedom through rapid access to information, financial resources, and technological forecasting.

**KEYWORDS**

academic freedom, scientific value added, mobile technological forecasting

## 1 INTRODUCTION

A good understanding of academic freedom in the higher education system can significantly enrich academic education and enhance its effectiveness. Freedom represents a personal framework that faculty members exercise through their interactions with the higher education system and all its aspects. This freedom can provide us with an understanding and explanation of the progress of educational institutions and lead to distinguished learning outcomes for students [38]. Real reforms cannot occur in higher education institutions unless those who teach have academic freedom in every aspect of the educational system.

Drawing on the perspectives of faculty members in Saudi universities provides a unique cultural and institutional context for this study. The findings aim to contribute

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valuable insights to the academic community, shedding light on the role of mobile technology in shaping the future of scientific research in the Saudi higher education landscape. The outcomes of this research have the potential to inform strategic decisions, guide policy development, and enhance faculty development programs, creating an environment conducive to maximizing the full scientific potential of mobile technology in Saudi universities.

Higher education experts recognize that universities have three main functions: teaching, academic research, and community service. In order for the university to carry out these functions efficiently and competently, society had to provide it with freedom of action. Hence, what is known as the triple, interconnected, and integrated equation in the work of universities emerged, which is: There is no university without a university professor, no university professor without academic freedom, and no university without academic freedom [7].

[33] Academic freedom refers to the faculty member's ability to research, investigate, think, form opinions, express ideas, engage in dialogue, and speak the objective truth without censorship or fear. This freedom requires a societal climate that nurtures its, safeguards it, and upholds its diverse practices. Therefore, it is methodologically difficult to separate the degree of academic freedom in Arab countries without linking it to the general environment that either positively or negatively embraces it. In all cases, it is a complex environment in terms of components and characteristics, where historical and cultural heritage intertwines with the nature of the state, authority, and the level of general societal awareness [35].

The study investigates the forecasting aspect of mobile technology, analyzing how faculty members anticipate the trajectory of these technologies in enhancing scientific value. It explores their perceptions regarding the potential benefits, challenges, and future trends associated with incorporating mobile technology into scientific research processes. Additionally, the study explores the practical implications of forecasting mobile technologies on the scientific value added, taking into account factors such as research efficiency, collaboration, and knowledge dissemination.

Academic freedom is a fundamental necessity for professors and university students in numerous higher education institutions to fulfill their requirements, as long as it is practiced in compliance with relevant regulations and legislation. The opportunities for freedom help the university professor develop his abilities and skills. The most prominent of these are: daring in dialogue and discussion; the ability to confront others; defend one's ideas, principles, trends, and rights; the ability to participate with others; and benefiting from the various capabilities available at the university. Additionally, the ability to communicate with leaders and individuals from various digital specializations and positions, as well as participate in decision-making, especially in the digital and modern technological fields, is necessary to contribute to the optimal preparation for university outcomes [14].

Academic freedom is not merely the freedom of speech or teaching desired by university faculty members. It is, in fact, the practice of the scholarly profession both within and outside educational institutions, following the customs and standards of the profession. Education at all levels carries a responsibility towards society and its challenges. Therefore, the main idea of academic freedom should not mean freedom from responsibility towards students, but that it is a necessary climate for the teacher and learner to develop creative thinking in the twenty-first century [20]. Miller (2014) indicated that university faculty members should have the freedom to invest in the infrastructure of the university institution to serve the scientific field instead of submitting to the demands of the central government. In other words, academic freedom must be strengthened in the university community within the framework of freedom, equality, and equal opportunities.

Academic research is an essential element in academic education and a decisive factor in enhancing the expertise of faculty members in their respective fields of specialization. Therefore, the university must be committed to its mission in academic research by training its employees, fostering a scientific environment and academic freedom for research, providing the necessary scientific tools for professors and students, ensuring their right to freedom of research, as well as engaging in research and digital activities [17].

The level of graduates from Arab universities is not satisfactory for many societal institutions. Academic education lacks vision and restricts students' freedom of discussion and expression. In Arab universities, the teacher is considered the authority figure, often stifling independent thinking. Then the issue of memorization and indoctrination arises. University learning is often characterized by indoctrination and a lack of vision, where students are expected to memorize and regurgitate information on exam papers [2].

In response to the challenges facing Arab universities due to rapid information development, many research studies related to future science have focused on the structures and models that educational institutions should adopt in the upcoming years. One of the most crucial criteria that future education must encompass is the criterion of effectiveness, as it serves as the fundamental measure for evaluating the educational institution's performance. Effectiveness refers to the extent to which one can realize the vision and accomplish pre-established goals. Value-added is one of the most fundamental and precise indicators for assessing the effectiveness of an educational institution, categorizing and establishing trust in the credibility of its performance evaluation results [13]. The study by Grossman, Loeb, Cohen, and Wyckoff [39] indicated that utilizing the value-added approach in the field of education is highly effective in assessing teacher performance and enhancing the quality of education.

Added value is defined as the quantifiable improvement achieved by the educational institution for each teacher and learner academically, skillfully, and behaviorally during the transition from one semester to another or from one year to another. This improvement is influenced by various factors, including those related to the educational institution, such as academic freedom for the teacher, some of which pertain to the learner, and some to the family and society [13]. [14] believes that value consists of the union of three elements: the mental component, the emotional component alone, and the behavioral component. The mental and emotional components are not sufficient to constitute value because they represent only a partial or latent value for functional purposes. The inclusion of the third element, which is the practice or behavior consistent with the latent value, is necessary. It combines with the mental and emotional components, thus completing the value with its three mental, emotional, and behavioral components.

[18] Emphasizing that every educational institution should enhance the achievement and performance of every learner from the start of the school year until its conclusion, irrespective of the learner's level and abilities. A reputable educational institution that offers significant academic freedom is one where students consistently surpass expectations, considering their accomplishments and academic backgrounds, and where all students can attain high levels of education. In this study, the focus was on levels of academic achievement to clarify the concept of added value. It was indicated that there was a change and difference in the level of academic achievement of students at the beginning of the academic year (S) from their level at the end of the academic year (S+1). The difference between the two levels represents the academic achievement added to the students during the academic year.

The rapid developments experienced by human societies have led to increased interest in studying the future across various fields such as politics, economics,

environment, medicine, technology, agriculture, and others. Studying the future is an integral part of a person's essence, which constantly moves in two directions: the past, with its experiences that shape the human self and establish its fundamental characteristics, and the future, which represents the horizon toward which the present moment is progressing. In fact, humans live in the near future, as the past and present cannot be captured. The future is a part of time and is a topic closely related to human life and existence [32]. Modern innovations such as globalization, technological progress, and the information explosion have placed significant pressure on universities in the realm of technological advancements. The technological and information revolution, along with the international information network, have further fueled this trend towards openness. Hence, the university that rejects these transformations or does not have a high ability in technological forecasting will fall behind and not thrive [22].

Due to the tremendous development that the field of educational technology is witnessing resulting from the integration between it and the field of information and communications mobile technology, with the emergence of many technological innovations such as e-learning, simulation, virtual reality, M-learning, Second Life, and other innovations, it has become necessary for educational institutions in general and university institutions in particular to train teachers in the necessary skills to deal with these innovations. Teachers need to know how to use them, employ them in teaching, plan and design them, and produce their applications and activities within the context of quality to achieve the highest possible benefit [21].

It is clear from the above that the importance of adding scientific value and technological forecasting for faculty members is closely related to their exercise of academic freedom within the university institution. Hence, academic freedom must be established as one of the primary objectives of higher education institutions. Therefore, the current research aims to study the relationship between academic freedom for faculty members in Arab universities and its impact on scientific advancements and technological forecasting.

## 2 RESEARCH PROBLEM

Academic freedoms in the Arab world are subject to significant deterioration and violation, whether by the educational institutions themselves or by the ruling authorities, who attempt to reduce academic knowledge to a mere form devoid of substance. A university faculty member experiences academic dissatisfaction stemming from academic stagnation and disconnect with decision-makers, leading to reluctance to express oneself and a preference for silence and avoidance. This necessitates the availability of academic research resources both domestically and internationally, along with collaboration between the academic sphere and other sectors of society to mutually benefit each other. Academic freedom is the fundamental value of the academic education system, encompassing freedom of thought, belief, and conscience. This freedom allows individuals to express their opinions and put them into practice, transforming them into behavior. This concept was supported by a study [15].

Despite what is written in university documents about the institution's diverse responsibilities, it has often become focused primarily on its cognitive function. As a result, research tasks and their associated activities are sometimes viewed as a luxury rather than a necessity for the university to function. This, in turn, has negative effects on university life. According to this situation, the education process is based on indoctrination, where the university professor treats students as mere "cabinets" for depositing information to be retrieved during exams. When the education process

turns into "indoctrination," it is impossible for it to lead to creativity. Indoctrination turns the student's mind into a mere store, while dialogic education releases creative energies and encourages self-initiative. This approach allows thought to grow and move in a constructive, democratic atmosphere [34].

In their current reality, higher education institutions lack clarity regarding the future vision of the digital system they aim to enhance among teachers and learners across different faculties. Adopting a system that ensures positive and effective interaction between teachers and learners, incorporating modern values, is essential for teachers to become independent, productive, and creative. The absence of the value issue from the institutional development plans and projects implemented in various educational institutions has led to a focus on developing the material and technological aspects while neglecting to address the value framework that accompanies this development. Thus, they neglect the most important element of development, which is developing effective scientific values that underpin development and material and technological modernization [30]. Despite the growing interest of most developed countries in the importance of adding scientific value, this aspect is still being experimented with or overlooked in many Arab countries. Therefore, attention must be paid to adopting the concept of added scientific value as an indicator of the effectiveness of higher education institutions. This is essential to spreading the culture of excellence within educational institutions and cultivating a nation of learners [13].

Attention to the scientific value of university institutions is an essential function that is often overlooked by educational institutions. This function can be an important competitive factor among educational institutions. The basis of this function is the utilization of digital research, whether through computers or mobile devices, to enhance the value of a specific service. This enhancement involves updating or enriching the educational services associated with it. The increase in value is evident in information services, and it escalates based on the extent to which faculty members utilize them [16], [24].

In this era, the world has witnessed a multitude of challenges with political, economic, educational, social, and cultural dimensions. These challenges, in their various dimensions, have been the basis for numerous calls to reform the educational system comprehensively, including its inputs, processes, and outputs. This is particularly crucial given the incapacity of university institutions to address the challenges arising from the shift of the world from an industrial society to a knowledge society. This is why many countries are racing to reform their educational systems with the aim of preparing their citizens for the new society. To address these challenges, it is essential to prioritize the academic freedom of university professors. This is increasingly important in light of the modern technologies that have become prevalent in Arab universities. It is no longer limited only to the teacher or student acquiring knowledge and facts but also to developing their technological skills and capabilities and building their personalities to be able to interact with modern technological variables [6]. This development reflects positively on society as it enables the generation, production, and dissemination of technological knowledge. It also helps narrow the significant knowledge gap between Arab universities and international universities that have advanced to the stage of a productive knowledge society [19].

Technological and informational challenges have become the focal point for numerous calls to reform the educational system, encompassing all its components, particularly in response to the academic system grappling with the challenges posed by information and mobile communication technology. There is a pressing need to align with the swift advancements in science and mobile technology. This is what prompted educational institutions to seek systems to complement traditional

methods, leading to the emergence of digital education programs that leverage modern mobile technology. Thus, computers and information networks have contributed to educating students in their homes and workplaces [31]. Moreover, the perspective of the university's faculty members and their experience in incorporating modern mobile technology in the field of education aligns with the focus on students' futures in the present era. Teachers are required to have ample experience seamlessly integrating mobile technology into the learning process. Therefore, the differences among educational institutions may stem from the varying abilities of their teachers and their willingness to adapt to modern educational practices. Methods, models, and applications that support the improvement and development of the educational process [5].

[11] points out that Arab universities lack centers for technological forecasting and teaching, unlike developed countries such as the United States of America. American reports have been issued forecasting the state of the future until the year 2020 AD. In addition, the interest in anticipating the future, whether scientific or creative, has become a civilized demand. Therefore, there is a need to spread interest in its methods, principles, and tools. This is extremely important in order to understand all the transformations taking place around us and to assist Arab universities in fostering an effective societal movement. The current research problem identified is the extent of academic freedom practiced by faculty members in Arab universities and its correlation with increased scientific value and technological forecasting [40].

## 3 RESEARCH OBJECTIVE

The current research aims to identify the extent of academic freedom exercised by faculty members in select Arab universities and its correlation with increased scientific contributions and technological predictions.

### 3.1 Research questions

The research aimed to find an answer to the following main question:

*What is the extent of academic freedom exercised by faculty members at the College of Education, King Khalid University, and how does it relate to the enhancement of scientific value and technological forecasting?*

The following sub-questions stem from this man's question:

1. What is the degree of academic freedom practiced by faculty members at the College of Education, King Khalid University?
2. What is the level of awareness among faculty members at the College of Education, King Khalid University, regarding the added scientific value?
3. What is the level of awareness among faculty members at the College of Education, King Khalid University, regarding future technological skills?
4. What is the predictive relationship between the components of added scientific value and the exercise of academic freedom among faculty members at the College of Education, King Khalid University?
5. What is the predictive relationship between technological forecasting skills and the practice of academic freedom among faculty members at the College of Education, King Khalid University?

### 3.2 Research significance

The importance of the current study is as follows:

1. Evaluating the added scientific value and technological forecasting among university faculty members.
2. Discussing the positive and negative aspects of practicing academic freedom in Arab universities.
3. Clarifying the relationship between academic freedom and the scientific development of a university faculty member.
4. Providing a clear vision for technological forecasting at the university.

### 3.3 Terminology

The search terms were defined procedurally as follows:

1. **Technological forecasting (Predicting the future of technology).** It refers to the future prospects of faculty members at King Khalid University in technological fields related to the direction of technological advancements and efforts to enhance them within the university based on specific quantitative indicators in the mobile technology sector to foster a knowledge-based society. It is measured by the score obtained by faculty members on the scale prepared for this purpose.
2. **Added scientific value.** In this study, we explore what faculty members at King Khalid University have gained in terms of cognitive, behavioral, and emotional aspects in the digital field as a result of exercising academic freedom within the university institution. It is measured by the score obtained by faculty members on the scale prepared for this purpose.
3. **Academic freedom.** In this study, academic freedom refers to "the faculty members at King Khalid University enjoying the opportunities to express their digital opinions and ideas and to publish them without restriction or condition, in accordance with international criteria of freedom, and is measured by the questionnaire prepared for this purpose."

## 4 TECHNOLOGICAL FORECASTING

Future studies or science in the third millennium have emerged as a significant driver of change, development, and progress. They play a crucial role in effectively addressing the diverse and rapidly evolving challenges faced by contemporary societies. This is particularly important in the context of the social, political, and economic transformations occurring within the intellectual and cultural spheres. The rapid changes and urgent developments that the world has witnessed in recent decades have raised many questions about what the future of human society will be like. In this context, future studies have emerged as a field of knowledge in which interest is increasing, especially in developed countries. Its role in the decision-making process is becoming more established, whether at the level of countries or at the level of institutions, associations, and civil society organizations [12].

Future studies are defined as an organized academic effort that aims to study the formulation of a set of conditional predictions that include the main features of the

conditions of a society or group of societies over a future period of time, extending slightly beyond twenty years [4].

The future is different from the past and the present because it is an extension of the present. Therefore, it is necessary to anticipate the future and plan for it strategically in the long term, relying on methods of calculation and analysis of alternatives and scenarios. This necessitates that education geared towards the future be based on future visions, aligned with long-term strategic objectives, prioritize qualitative development, and address the challenges of quantitative expansion [28]. [8] Believes that a person will recall the events they experienced previously and make them present because he knows his past. He will realize the moment he is living and contemplate it because he is in a state of recognition. He will look forward to the future, going beyond the monotonous flow of cosmic time and trying to reach the future that he wants to know.

[42] Emphasizing that future forecasting studies, when they combine exploration of the potential future and the preferred future, express a mixture of theoretical and applied research, methodology, philosophy, and operational policy, serve as a comprehensive introduction to understanding the nature of future studies. He suggests that it be viewed as a tree with branches offering different possibilities. The task for future students is to study the tree holistically, recognizing that each branch represents an alternative scenario that they must either avoid or accept. He explained that there are three tasks for future researchers: constructing possible future alternatives, evaluating the probability of each alternative occurring, and assessing the degree of desire and acceptance of each alternative.

[9] pointed out that technological forecasting in the field of academic education should encompass the same concept. Educational mobile technology serves not only as information tools but also as methods, processes, and approaches. In other words, it involves process mobile technology and product mobile technology.

[23] believes that the goal of higher education institutions in the knowledge era is to prepare new generations of graduates (a new product) who can work in the global electronic market. This market relies on communication and information mobile technology, smart cognitive systems, e-commerce, the digital economy, remote ordering, expert systems in medical diagnosis and treatment, improved productivity in education, industry, and trade sectors, and the use of artificial intelligence mobile technology in various fields of education. [37] It is indicated that colleges or universities of the future must place a strong emphasis on student participation in the academic environment, whether through traditional methods or modern technologies, to achieve high success rates. Therefore, the interest in anticipating the future of technological education at the university has many advantages. The most prominent of these advantages include rationalizing educational decisions to optimize the investment of available resources. This improvement aims to enhance the efficiency of utilizing public resources in the field of education. Additionally, it involves monitoring perceptions, alternatives, and choices that assist educational decision-makers in selecting technological systems suitable for future generations. Every nation considers education reform as one of the most crucial methods that contribute to improving the quality of life for its citizens [41]. Therefore, the University of Mobile's technology of the future requires a vast array of capabilities in computer, communications, and mobile information technology of all kinds [29]. [36] It was concluded that colleges in the future must prioritize quality in all aspects of the educational process to generate high-quality educational outcomes that play a significant role in serving society.

# 5 METHODOLOGY AND PROCEDURES

## 5.1 Research methodology

The current study employs the descriptive method. Due to its suitability for this research, the "Delphi" method was also used as one of the methods for studying the future.

## 5.2 Research population

The research community consisted of all 61 faculty members in the College of Education at King Khalid University during the first semester.

## 5.3 The research sample

A random sample of faculty members at the College of Education was selected in the first semester of the university year. The number of its members was 23 faculty members, which accounted for about 37.70% of the original community.

## 5.4 Research tools

The study used three tools: the Academic Freedom Questionnaire, the Scientific Value-Added Scale, and the Technological Forecasting Scale. Here are the steps to prepare each of them:

1. **Preparing the questionnaire**

   The research questionnaire was prepared according to the following steps:

   A) **Purpose of the questionnaire**

   The questionnaire aimed to determine the extent to which faculty members at the College of Education at King Khalid University exercise academic freedom.

   B) **Building the questionnaire**

   The questionnaire was constructed using a three-point Likert scale and comprised three sections.

   - First section: Information about the questionnaire.
   - Second section: Information about the research sample.
   - Third Section: Questionnaire items, as outlined in Table 1.

**Table 1.** The questionnaire's items in their initial form

| S | Field | No. of Phrases |
|---|---|---|
| 1 | Teaching | 10 |
| 2 | Academic research | 10 |
| 3 | Community service | 10 |
| 4 | Participation in decision-making | 8 |
| Total | 4 | 38 |

**C) Control of the questionnaire**

This is done through:

– **Presenting the initial image of the questionnaire to a group of arbitrators**

After completing the formulation of the questionnaire, it was presented to a group of five arbitrators in the field of educational administration and curricula. Their opinions concurred on the appropriateness of the questionnaire for its intended purpose. They suggested removing two phrases related to teaching and one phrase concerning participation in decision-making. Thus, the number of questionnaire items increased to 35.

- **Correction of the questionnaire's phrases**

According to the three-point Likert scale, three grades were assigned for the "agree" response, two grades for the "neutral" response, and one grade for the "disagree" response. The range was calculated according to the following Table 2:

**Table 2.** The length of questionnaire items

| S | Answer | Degree | Range | Degree of Practice |
|---|---|---|---|---|
| 1 | I agree | 3 | 3–2.34 | High |
| 2 | Neutral | 2 | 1.67–2.33 | Average |
| 3 | I disagree | 1 | 1.66–1 | Weak |

- **Exploratory application of the questionnaire**

After gathering the arbitrators' opinions, a questionnaire was administered to a survey sample of 13 faculty members at the College of Education, King Khalid University, to assess the appropriateness of the phrases from both linguistic and numerical perspectives. Their responses demonstrated the suitability of the questionnaire phrases, free from any linguistic or numerical ambiguity.

- **Internal consistency of the questionnaire (statistical validity)**

The Spearman correlation coefficient matrix was calculated between the dimensions of the questionnaire and the total score, as shown in the Table 3 below:

**Table 3.** Spearman correlation coefficient between questionnaire dimensions and the total score

| Item | Teaching | Academic Research | Community Service | Decision-Making |
|---|---|---|---|---|
| The entire questionnaire | 0.68* | 0.81* | 0.80* | 0.84* |

*Note:* * significance at (0.05).

It is clear from the above that the correlation coefficient of the first dimension of the questionnaire as a whole is 0.68, and the correlation coefficient of the second dimension of the questionnaire as a whole is 0.81. The correlation coefficient of the third dimension with the questionnaire as a whole is 0.80, and the correlation coefficient of the fourth dimension with the questionnaire as a whole is 0.84. Both values are significant and statistically acceptable. This suggests that the dimensions of the questionnaire measure the same construct as the questionnaire as a whole, thereby indicating the validity of both the questionnaire and its dimensions.

- **Calculating the reliability of the questionnaire**

The reliability coefficient of the questionnaire was calculated using Cronbach's alpha equation, and it was found to be approximately 0.79, which is an appropriate reliability coefficient.

**D) Final form of the questionnaire**

After drafting the questionnaire and adjusting it statistically, it became valid for final application.

**2. Scientific value-added scale**

The scientific value-added scale was prepared according to the following steps: [3] The scale was adopted after making some modifications to suit the current research. The scale was prepared according to the following steps:

**A) Determining the aim of the scale**

The aim of the scale is to identify the level of awareness among faculty members at King Khalid University regarding the scientific value added by the university's website, www.kku.edu.sa, in the field of academic research.

**B) Scale items**

The scale consists of five dimensions, which are shown in Table 4.

**Table 4.** The number of dimensions and items of the scale in its initial form

| S | Field | No. of Phrases |
|---|---|---|
| 1 | Quick access to information | 6 |
| 2 | Ease of use | 5 |
| 3 | Adequacy and comprehensiveness of digital information | 5 |
| 4 | Luxury value | 5 |
| 5 | Benefit value | 6 |
| Total | 5 | 27 |

**C) Controlling the scale**

This is done through:

– **Presenting the initial image of the scale to a group of arbitrators**

After completing the wording of the scale, it was presented to a panel of specialists in educational administration and curriculum development. Their opinions concurred on the suitability of the scale for its intended purpose after removing the second phrase in the benefit value dimension, resulting in a total of 26 phrases in the scale.

- **Correction of the scale's phrases**

According to the three-point Likert scale, three scores were assigned to the "agree" response, two to the "neutral" response, and one to the "disagree" response. The range was calculated according to the following steps:

Range = 3–1 = 2

The length of each category of the questionnaire = (2 ÷ 3) = 0.66

**Table 5.** The length of the scale items

| S | Answer | Degree | Range | Degree of Practice |
|---|---|---|---|---|
| 1 | I agree | 3 | 3–2.34 | High |
| 2 | Neutral | 2 | 1.67–2.33 | Average |
| 3 | I disagree | 1 | 1.66–1 | Weak |

- **Exploratory application of the scale**

  After obtaining the judge's opinion, the scale was applied to a sample of thirteen faculty members at the College of Education, King Khalid University, to assess the suitability of the phrases from both linguistic and numerical perspectives. Their responses showed that the scale's phrases fit without any numerical or linguistic ambiguity.

- **Internal consistency of the scale (statistical validity)**

  The Spearman correlation coefficient matrix was calculated between the dimensions of the scale and the total score as shown in Table 6.

**Table 6.** The Spearman correlation coefficient matrix between the dimensions of the scale and the total score

| Item | Quick Information Access | Ease of Use | Comprehensive Information | Financial Value | Benefit Value |
|---|---|---|---|---|---|
| The entire scale | 0.59* | 0.61* | 0.76* | 0.57* | 0.72* |

*Note:* * significance at (0.05).

It is clear from the above that the correlation coefficient of the first dimension with the scale as a whole is 0.59, the correlation coefficient of the second dimension with the scale as a whole is 0.61, and the correlation coefficient of the third dimension with the scale as a whole is 0.76. The correlation coefficient of the fourth dimension with the scale as a whole is 0.57. The correlation coefficient of the fourth dimension with the scale as a whole is 0.72, which is statistically significant and an acceptable value. This indicates that the dimensions of the scale measure the same construct as the scale as a whole, which confirms the validity of both the scale and its dimensions.

- **Calculating scale reliability**

  The reliability coefficient was calculated using Cronbach's alpha equation and was found to be approximately 0.73, indicating an appropriate level of reliability.

**D) Final form of the scale**

After formulating the scale and adjusting it statistically, the scale became valid for final application.

**3. Technological forecasting scale**

The technological forecasting scale was prepared according to the following steps:

**A) Setting the goal of the scale**

The aim of the scale is to identify the level of awareness among the faculty at King Khalid University regarding the future technological skills expected to be utilized.

**B) Scale items**

The scale consisted of 22 phrases dealing with the technological skills expected to be used in the future by faculty members at King Khalid University.

**C) Adjusting the scale**

This is done through:

– **Presenting the initial image of the scale to a group of arbitrators**

After completing the formulation of the scale's items, it was presented to five specialists in educational mobile technology, curriculum and teaching methods, and psychology. Their opinions concurred on the appropriateness

of the scale for its intended purpose, along with the linguistic revision of phrases 2, 5, 14, and 21.

- **Correction of the scale phrases**

According to a three-point Likert scale, a score of three as assigned to the "agree" response, two for the "neutral" response, and one for the "disagree" response.

- **Exploratory application of the scale**

After obtaining the judge's opinions, the scale was applied to a sample of 13 faculty members at the College of Education, King Khalid University, to assess the suitability of the phrases from both linguistic and numerical perspectives. Their responses showed that the scale's phrases fit without any numerical or linguistic ambiguity.

- **Calculating scale reliability**

The reliability coefficient was calculated using Cronbach's alpha equation, and was found to be approximately 0.89, which is an appropriate measure of reliability.

**D) Final form of the scale**

After formulating the scale and adjusting it statistically, the scale became valid for final application.

## 6 RESULTS AND DISCUSSION

After monitoring the ratings of faculty members at the College of Education, King University, in the Academic Freedom Questionnaire, the Scientific Value-Added Perception Scale, and the Technological Forecasting Scale, research questions were answered as follows:

**The answer to the first question**

What is the extent of academic freedom exercised by faculty members at the College of Education, King Khalid University?

To answer this question, the arithmetic mean and standard deviation were calculated for each item of the questionnaire, as shown in Table 7.

**Table 7.** Arithmetic mean and standard deviation of the items on the academic freedom scale in the field of teaching

| S | Phrase | Mean | SD | Degree | Rank |
|---|---|---|---|---|---|
| 1 | The faculty member has the freedom to use modern and diverse methods in his teaching | 2.78 | 0.42 | High | 2 |
| 2 | The university allows a faculty member to propose a research plan | 1.87 | 0.69 | Average | 8 |
| 3 | The university allows a faculty member to suggest curricula | 2.34 | 0.49 | High | 4 |
| 4 | The university faculty member has the freedom to suggest textbooks | 1.87 | 0.69 | Average | 7 |
| 5 | The university allows a faculty member to suggest digital references for students | 2.87 | 0.34 | High | 1 |
| 6 | The faculty member has the freedom to speak on scientific topics related to the subject of the subject he is teaching | 2.57 | 0.51 | High | 3 |
| 7 | The faculty member has the freedom to choose the appropriate evaluation methods for his students | 2.26 | 0.96 | Average | 5 |
| 8 | The university allows a faculty member to perform additional work to his teaching course | 2.17 | 0.78 | Average | 6 |

It is clear from Table 7 that only four items in this category received a high rating, while the remaining paragraphs received an average rating. The freedom of the faculty member to suggest digital references came first.

**Table 8.** Arithmetic mean and standard deviation of the items of the academic freedom scale in the field of academic research

| S | Phrase | Mean | SD | Degree | Rank |
|---|---|---|---|---|---|
| 1 | The faculty member has the freedom to conduct research in his field of specialization with the aim of enriching knowledge | 2.91 | 0.42 | High | 2 |
| 2 | The university gives freedom to faculty members to carry out academic research that they determine themselves | 2.78 | 0.42 | High | 4 |
| 3 | The university provides an electronic database for academic research | 2.83 | 0.39 | High | 3 |
| 4 | The university gives freedom to faculty members to publish their research in specialized scientific journals | 2.96 | 0.21 | High | 1 |
| 5 | The university supports faculty members financially and morally in publishing their research | 1.65 | 0.78 | Average | 9 |
| 6 | The university provides faculty members with specialized journals to publish their research | 2.43 | 0.59 | High | 5 |
| 7 | The university gives freedom to faculty members to attend seminars and conferences | 1.5 | 0.90 | Poor | 10 |
| 8 | The university allows a faculty member to provide digital consultations to various entities | 1.7 | 0.86 | Average | 8 |
| 9 | The university allows a faculty member to participate with students in conducting digital research | 2.26 | 0.54 | Average | 6 |
| 10 | The university allows the faculty member to obtain a digital promotion in accordance with the controls and regulations | 1.96 | 0.77 | Average | 7 |

It is clear from Table 8 that only five items in this area were rated highly, while the other items were rated average. The faculty members' freedom to publish digital research in specialized scientific journals was prioritized over their ability to attend international conferences.

**Table 9.** Arithmetic mean and standard deviation of the items of the academic freedom scale in the field of community service

| S | Phrase | Mean | SD | Degree | Rank |
|---|---|---|---|---|---|
| 1 | The university provides the faculty member with various possibilities to serve the community | 2.52 | 0.59 | High | 2 |
| 2 | The university allows a faculty member to participate in extracurricular student activities | 2.04 | 0.93 | Average | 5 |
| 3 | The university gives freedom to faculty members to participate in seminars and give lectures that address community problems and issues | 2.60 | 0.78 | High | 1 |
| 4 | The university gives freedom to faculty members to participate in training courses for governmental and non-governmental institutions | 1.74 | 0.75 | Average | 10 |
| 5 | The university gives freedom to faculty members to prepare books intended to serve the community | 1.87 | 0.63 | Average | 8 |
| 6 | The university gives freedom to faculty members to participate in adult education and literacy | 1.91 | 0.66 | Average | 9 |
| 7 | The university gives freedom to faculty members to conduct practical research to solve community problems | 2.35 | 0.49 | High | 3 |
| 8 | The university gives freedom to faculty members to provide digital consultations in various fields to community members | 1.96 | 0.64 | Average | 7 |
| 9 | The university gives freedom to faculty members to participate in volunteer areas for community members | 2.22 | 0.74 | Average | 4 |
| 10 | The university gives freedom to faculty members to participate in various social events among community members | 2.00 | 0.60 | Average | 6 |

It is clear from Table 9 that only three items in this category received a high rating, while the remaining paragraphs received an average rating. The faculty member's freedom to deliver lectures and attend seminars took precedence.

**Table 10.** Arithmetic mean and standard deviation on the items of the academic freedom scale in the field of decision-making

| S | Phrase | Mean | SD | Degree | Rank |
|---|---|---|---|---|---|
| 1 | The university gives freedom to faculty members to participate in university decision-making | 1.87 | 0.92 | Average | 5 |
| 2 | The university gives freedom to faculty members to appoint teaching assistants in the department to which they belong | 2.13 | 0.76 | Average | 3 |
| 3 | The university gives freedom to faculty members to express their opinion on issues of concern to the department | 2.65 | 0.49 | High | 1 |
| 4 | The university gives freedom to faculty members to participate in setting the statutory laws for the university community | 1.78 | 0.80 | Average | 6 |
| 5 | Faculty members at the university have the right to submit their proposals to administrative channels within the university | 1.96 | 0.71 | Average | 4 |
| 6 | The university gives freedom to faculty members to choose postgraduate students | 2.22 | 0.80 | Average | 2 |
| 7 | The university gives freedom to faculty members to participate in choosing the dean of the college to which they belong | 1.52 | 0.79 | Poor | 7 |

It is clear from Table 10 that only one item in this area received a high rating, while five items received an average rating. One paragraph received a poor grade, highlighting the faculty member's freedom to express opinions on departmental concerns as the top priority.

**Table 11.** Arithmetic mean and standard deviation for the areas of academic freedom as a whole

| Item | Item Content | Mean | Degree | SD | Rank |
|---|---|---|---|---|---|
| 1 | Academic freedom in teaching | 2.34 | High | 0.61 | 1 |
| 2 | Academic freedom in academic research | 2.30 | Average | 0.59 | 2 |
| 3 | Academic freedom in community service | 2.21 | Average | 0.68 | 3 |
| 4 | Academic freedom in decision-making | 2.01 | Average | 0.75 | 4 |
| Academic freedom for the entire questionnaire | | 2.01 | | Average | |

It is clear from Table 11 that the academic freedom of faculty members in the areas of academic research, community service, and decision-making was average. The only area that stood out with a high degree of academic freedom was teaching. In general, academic freedom for university faculty members is exercised to an average degree.

These results can be discussed as follows:

- The university's faculty members have the freedom to use modern and diverse methods in their teaching to enhance student achievement and foster critical thinking skills.
- The university allows its members to develop existing curricula and create new study plans that will enhance and develop the educational process.

- Those responsible for teaching at the university have the freedom to update, develop, and recommend modern and prescribed digital resources to students.
- The university's faculty members are free to speak on scientific topics related to the subjects they teach.
- The university's faculty members have great freedom in choosing appropriate assessment methods for their students.
- The university's faculty members are free to publish their research in specialized scientific journals.
- A university faculty member has complete freedom to conduct academic research as they see fit, without any interference from the university.
- The university allows faculty members the freedom to participate in seminars and deliver lectures addressing community problems and issues.
- The university allows faculty members the freedom to express their opinions on issues of interest to the department.

This result is consistent with the studies of [10], [27], and [1]. This result is also consistent with the findings of a study by [26], which demonstrated the freedom of faculty members to conduct research, publish, and teach in ways they consider suitable for their students. Proposing contemporary educational programs and communicating his proposals to university administrators are some of the positive aspects of academic freedom among faculty members at the University of Jordan.

This study also aligns with [25], which concluded that the erosion of academic freedom, a key objective of Arab universities, is one of the most significant challenges in academic education. This is evidence of the weakness of academic freedom in universities. The research attributes this to the recent interest of Arab universities in academic freedom, the modernity of the universities themselves, and the lack of awareness of academic freedom.

**What is the level of awareness among faculty members at the College of Education, King Khalid University, regarding the added scientific value?**

To answer this question, the arithmetic mean and standard deviation were calculated for each item of the scale, as shown in Table 11.

**Table 12.** Arithmetic mean and standard deviation of the scientific value added in the field of quick access to information

| S | Phrase | Mean | SD | Degree | Rank |
|---|---|---|---|---|---|
| 1 | I can access digital information easily through the university's website | 2.96 | 0.21 | High | 1 |
| 2 | The university's digital institutions respond to any scientific inquiry in a short time | 2.35 | 0.49 | High | 5 |
| 3 | I can move between electronic digital resources freely and quickly without hindrance | 2.79 | 0.42 | High | 2 |
| 4 | The university provides applications for smart phones to obtain information anywhere and at any time | 2.39 | 0.50 | High | 4 |
| 5 | The university provides all digital information on its website in a few pages | 2.22 | 0.42 | Average | 6 |
| 6 | The university provides a search engine to help access the required digital information | 2.57 | 0.51 | High | 3 |

It is clear from Table 12 that five items in this area were rated high, while one paragraph was rated average. The ease of access to information through the university's website ranked first.

**Table 13.** Arithmetic mean, and standard deviation of the scientific value added in the field of ease of use

| S | Phrase | Mean | SD | Degree | Rank |
|---|---|---|---|---|---|
| 1 | The university website displays its digital contents clearly | 2.61 | 0.50 | High | 3 |
| 2 | The university website lists all digital services addresses on the main page of the website | 2.57 | 0.51 | High | 4 |
| 3 | The university website displays all digital subtitles in a coherent manner | 2.71 | 0.39 | High | 2 |
| 4 | The university website provides digital information in a convenient, printable format | 2.78 | 0.42 | High | 1 |
| 5 | The university's website provides technical support and a place to answer digital inquiries | 2.61 | 0.50 | High | 3 |

It is clear from Table 13 that all items in this area ranked highly, and that the university website's digital information form ranked first.

**Table 14.** Arithmetic mean and standard deviation of the scientific value added in the field of comprehensiveness and adequacy of information

| S | Phrase | Mean | SD | Degree | Rank |
|---|---|---|---|---|---|
| 1 | The university's website displays up-to-date academic information | 2.70 | 0.47 | High | 2 |
| 2 | The university's website provides comprehensive information covering all my digital needs | 2.57 | 0.51 | High | 3 |
| 3 | The university's website provides credible academic information | 2.83 | 0.39 | High | 1 |
| 4 | The university's website is linked to international scientific sources | 2.83 | 0.39 | High | 1 |
| 5 | The university website constantly updates its information | 2.70 | 0.47 | High | 2 |

It is clear from Table 14 that all items in this area ranked highly. The connection of the university's website to international scientific sources and the credibility of the information came in first place.

**Table 15.** Arithmetic mean and standard deviation of the scientific value added$ in the financial value field

| S | Phrase | Mean | SD | Degree | Rank |
|---|---|---|---|---|---|
| 1 | The university's website helps me obtain the digital information I need | 2.83 | 0.39 | High | 1 |
| 2 | The university's website works around the clock to provide its digital services | 2.65 | 0.49 | High | 2 |
| 3 | The university's website provides its digital information adequately and securely | 2.65 | 0.49 | High | 2 |
| 4 | I get my digital services from the university's website from home | 2.83 | 0.39 | High | 1 |
| 5 | I can easily pay my financial dues through the university's website | 2.48 | 0.51 | High | 3 |

It is clear from Table 15 that all items in this area ranked highly. Both obtaining digital information from home and fulfilling the digital information needed by the faculty member came in first place.

**Table 16.** Arithmetic mean and standard deviation of the scientific value added in the field of benefit value

| S | Phrase | Mean | SD | Degree | Rank |
|---|---|---|---|---|---|
| 1 | The university's website is concerned with providing scientific services to faculty members from outside the university | 2.39 | 0.50 | High | 3 |
| 2 | The university's website helps me obtain digital services with minimal effort | 2.70 | 0.47 | High | 2 |
| 3 | The university's website provides its digital services in the same non-electronic format | 2.22 | 0.42 | Average | 4 |
| 4 | The university's website allows international conferences to be held electronically | 1.96 | 0.21 | Average | 5 |
| 5 | I feel comfortable obtaining research information from the university website | 2.83 | 0.39 | High | 1 |

It is clear from Table 16 that three items in this area received high rating, while two items were rated as average. The feeling of psychological comfort that comes from accessing research information on the university's website was the initial response.

**Table 17.** Arithmetic mean of the dimensions of the scientific value-added scale as a whole

| Item | Item Content | Mean | Degree | SD | Rank |
|---|---|---|---|---|---|
| 1 | Quick access to information | 2.55 | High | 0.43 | 4 |
| 2 | Ease of use | 2.66 | High | 0.46 | 3 |
| 3 | Adequacy and comprehensiveness of digital information | 2.73 | High | 0.44 | 2 |
| 4 | Financial value | 2.96 | High | 0.45 | 1 |
| 5 | Benefit value | 2.42 | High | 0.40 | 5 |
| Scientific value added for the entire scale | | 2.61 | | | |

It is clear from Table 17 that the additional scientific value for all areas of the scale reached a high degree. In general, the King Khalid University website provided high scientific value, with financial value ranking first. This result is consistent with the findings of the study by Smith et al. (2010) and Johnson and Lee (2015).

**What is the awareness degree faculty members at the College of Education, King Khalid University, of future technological skills?**

To answer this question, the arithmetic mean and standard deviation were calculated for each item of the scale, as shown in Table 18.

**Table 18.** Arithmetic mean and standard deviation of the technological forecasting scale items

| S | Phrase | Mean | SD | Degree | Rank |
|---|---|---|---|---|---|
| 1 | I will use cloud computing to store my files | 2.74 | 0.45 | High | 4 |
| 2 | I will use the smart grid to make important decisions in my digital and business life | 2.65 | 0.49 | High | 5 |
| 3 | I will use electronic mind maps in the educational process | 2.83 | 0.39 | High | 2 |
| 4 | I will use Google in the electronic calendar | 2.87 | 0.34 | High | 1 |
| 5 | I will use social networks frequently | 2.13 | 1.01 | Average | 17 |
| 6 | I will use Google Maps to teach my students more than now | 2.60 | 0.58 | High | 7 |
| 7 | I will create a YouTube channel for my academic specialty | 2.52 | 0.79 | High | 10 |
| 8 | I will be very interested in employing virtual reality programs in teaching my students | 2.61 | 0.72 | High | 6 |
| 9 | I will use e-books in my teaching to students | 2.57 | 0.51 | High | 8 |
| 10 | I will use Tablet PC devices extensively in teaching students | 2.65 | 0.49 | High | 5 |
| 11 | I will design presentations using Prezi instead of PowerPoint | 2.52 | 0.67 | High | 9 |
| 12 | I will use m-learning mobile devices extensively in teaching my students | 2.48 | 0.59 | High | 12 |
| 13 | I will use Nanotechnology programs in the field of education | 2.47 | 0.59 | High | 13 |
| 14 | I will focus on educating my students at home by using flipped learning tools | 2.26 | 0.81 | Average | 16 |
| 15 | I will focus on using E-learning Spaces in the field of education | 2.35 | 0.49 | High | 15 |
| 16 | I will focus on employing U-learning in the field of education | 2.39 | 0.50 | High | 14 |
| 17 | I will use the Quick Response (QR) code in the field of education | 2.48 | 0.59 | High | 12 |

*(Continued)*

**Table 18.** Arithmetic mean and standard deviation of the technological forecasting scale items *(Continued)*

| S | Phrase | Mean | SD | Degree | Rank |
|---|---|---|---|---|---|
| 18 | I will focus on artificial intelligence programs in educating my students | 2.70 | 0.47 | High | 5 |
| 19 | I will use Google tools to create electronic completion files | 2.65 | 0.49 | High | 6 |
| 20 | I will invest in electronic participation services globally in order to enrich the teaching and learning processes | 2.83 | 0.39 | High | 2 |
| 21 | I will focus on the electronic assessment when determining the level of my students | 2.83 | 0.39 | High | 2 |
| 22 | I will focus on monitoring my students' performance electronically more closely | 2.78 | 0.52 | High | 3 |
| Overall average score for the technological forecasting scale as a whole and its degree | | **2.59** | | **High** | |

It is clear from Table 18 that all items in the scale were rated high, while two items were rated average. Using Google's website ranked first. In general, technological forecasting among faculty members was highly rated. This findings is consistent with the results of Goncalves' study [37].

**What is the predictive relationship of the components of added scientific value to the practice of academic freedom among faculty members at the College of Education, King Khalid University?**

To address this question, the following hypothesis is formulated: "The components of added scientific value can be predicted based on the exercise of academic freedom among faculty members at King Khalid University." To test the validity of this hypothesis, linear regression analysis was employed in its mathematical form: Y = ac1 + b x2 + c x3 + d x4 + e x5 + w, where "a, b, c, d, e, w" are numerical constants.

Y represents the independent variable, while Q1, Q2, Q3, Q4, and Q5 represent the faculty members' scores on the dimensions of the scientific value-added scale. Table 19 shows the results of the linear regression analysis.

**Table 19.** Results of linear regression analysis of the components of the scientific value-added scale in terms of the exercise of academic freedom

| Skills | Multiple Correlation Coefficient | Regression Coefficient Reliability | Regression Coefficient | Beta Coefficient | T Value |
|---|---|---|---|---|---|
| Quick access to information | | | –3.72 | –0.39 | –2.27* |
| Ease of use | 0.77 | 96.91 | 1.14 | 0.20 | 0.26 |
| Information comprehensiveness | | | –2.96 | –0.58 | –1.66 |
| Financial value | | | 6.70 | 1.52 | 4.41* |
| Benefit value | | | –2.26 | –0.30 | 0.26 |

*Note:* * significance at (0.05).

It is clear from Table 19 that the components associated with quick access to information and financial value are factors that can predict the level of academic freedom among faculty members at King Khalid University. Therefore, the predictive regression equation can be expressed as follows: $y = -0.39\ x_1 - 1.52\ x_2 + 96.91$.

This may be attributed to the important and necessary sub-skills encompassed by these two skills in promoting research freedom, particularly in terms of convenient access to contemporary digital information at all times without any financial burden on the university.

**What is the predictive ability of technological forecasting skills in terms of the practice of academic freedom among faculty members at King Khalid University?**

To answer this question, the following hypothesis is formulated:

"Technological forecasting skills can be predicted based on the extent to which academic freedom is practiced by faculty members at King Khalid University."

To test the validity of this hypothesis, linear regression analysis was used in its mathematical form: $y = a + bx$, where a and b are numerical constants, y represents the dependent variable, and x represents the faculty members' scores on the scientific value-added scale. Table 20 shows the results of the linear regression analysis.

**Table 20.** Results of linear regression analysis of the components of the technological forecasting scale in terms of the practice of academic freedom

| Scale | Multiple Correlation Coefficient | Regression Coefficient Reliability | Regression Coefficient | Beta Coefficient | T Value |
|---|---|---|---|---|---|
| Future forecasting | 0.49 | 39.31 | 0.66 | 0.49 | 2.55* |

*Note:* * significance at (0.05).

It is clear from Table 20 that the components of the technological forecasting scale are predictors of the level of academic freedom among faculty members at King Khalid University. The predictive regression equation can be expressed as follows: $y = 0.66\ x_1 + 39.31$.

This may be attributed to the modern technological programs and tools integrated into the Future Foresight Scale, which play a significant role in enhancing the educational process. Consequently, this enhancement may reflect in the academic achievements and critical thinking skills of university students.

## 7 RESULTS

Based on the previous findings, the most significant results of the study can be highlighted as follows:

- The academic freedom of faculty members in the field of academic research was found to be average. This could be attributed to faculty members' perception that the university does not prioritize their research interests and international publication in specialized scientific journals. Additionally, the lack of adequate financial support from the university for conducting digital research and global publishing may contribute to this situation.
- The academic freedom of faculty members in the field of community service has reached an average level, possibly due to the university's lack of interest in conducting research focused on community service and its various issues. It may also be due to the lack of freedom that the university provides to faculty members for offering digital consultations in various fields to the public, as well as the limited opportunities for faculty to engage in various social events with the community.
- Academic freedom for faculty members in the field of decision-making has reached an average level. This may be due to the limited autonomy given to faculty members to engage in university decision-making as well as in establishing university policies and choosing university leaders.

- The only field in which the university enjoys high freedom is the field of teaching, which has a high degree of autonomy. This may be attributed to the autonomy granted to faculty members in recommending textbooks to students, the utilization of contemporary teaching and assessment techniques, and the liberty to suggest and design study curricula.
- The study concluded that the scientific value added by the university's website was significant. This may be attributed to the easy access to digital information, seamless navigation between sources without any hindrances, user-friendly interface, coherent presentation of information, comprehensiveness, modernity of the information, and its integration with global digital sources.
- The level of awareness of technical forecasting among faculty members at the College of Education was high. This could be attributed to their extensive utilization of modern technologies in the teaching field, including e-learning, electronic achievement files, social media tools, and tablet PCs, which have significantly enhanced the teaching and learning experiences of students.
- Quick access to information and financial value are skills that can predict the degree of academic freedom among faculty members at King Khalid University.
- Technological forecasting skills are essential for predicting the level of academic freedom among faculty members at King Khalid University.
- In essence, the relationship between mobile technological forecasting and added scientific value, as elucidated by faculty members in Saudi universities, reveals a dynamic interplay that requires continuous attention and responsiveness to technological advancements. As Saudi universities continue to position themselves at the forefront of scientific research, embracing mobile technology with strategic foresight can undoubtedly propel them towards a future characterized by innovation, collaboration, and increased scientific impact.

## 8 RESEARCH RECOMMENDATIONS

Based on the research results, the following recommendations can be made:

- There is a need to educate the university's faculty members about the boundaries of their academic freedom, particularly in the realm of academic research.
- The university must diversify its electronic resources to provide faculty members with new scientific value.
- The necessity of training faculty members on technological innovations and how to employ them in the field of teaching.
- Conducting training courses for faculty members on the concept of academic freedom and how to exercise it appropriately within the boundaries of the university's regulations.
- Reconsider university curricula to promote freedom of discussion, expression of opinions, and constructive criticism.
- As we look to the future, the outcomes of this study have implications for academic leadership, policymakers, and educators in Saudi universities. Strategic planning, investment in technological infrastructure, and targeted faculty development initiatives are essential components of a comprehensive approach to harnessing the potential of mobile technology in scientific research. The findings contribute to the ongoing discourse on the role of technology in higher education, emphasizing the need for adaptive strategies that align with the evolving landscape of scientific inquiry.

### 8.1 Conflict of interest

The authors declare that there are no conflicts regarding the publication of this paper.

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