



مجلة جامعة سبها للعلوم البحتة والتطبيقية  
Sebha University Journal of Pure & Applied Sciences

Journal homepage: [www.sebhau.edu.ly/journal/jopas](http://www.sebhau.edu.ly/journal/jopas)



## Factors Influencing the Acceptance of E-Training Among Faculty Staff at Sebha University: A Structural Equation Modelling Approach

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### Keywords:

Structural Equation Modeling.  
E-Training.  
Sebha University.  
Faculty Staff.  
Extended TAM.  
TAM2.

### ABSTRACT

This study investigates the factors influencing the acceptance of e-training among faculty staff at Sebha University using the extended Technology Acceptance Model (TAM2). A total of 74 responses were collected via Google Forms concerning subjective norm, image, job relevance, output quality, result demonstrability, perceived ease of use (PEOU), perceived usefulness (PU), experience, voluntariness, and intention to use. Measurement and structural models were evaluated using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS 4. Reliability, internal consistency, and validity were confirmed, with Cronbach's  $\alpha$  ranging from 0.776 to 0.929 and AVE values from 0.688 to 0.876, indicating convergent validity. PEOU was found to predict PU, and both PEOU and PU predicted intention to use, albeit with weaker support than the model suggested ( $\beta = 0.441, p < 0.001$ ;  $\beta = 0.284, p = 0.046$ ;  $\beta = 0.314, p = 0.033$ ). No significant effects were identified for subjective norm, image, job relevance, output quality, or result demonstrability. Moderation analysis revealed that experience and voluntariness had no effect on the impact of subjective norm on PU or behavioural intention (all  $p > 0.05$ ; all  $f^2 < 0.01$ ). The model accounted for 66.5% of the variance in PU and 56.6% in intention, highlighting the importance of perceived ease of use and usefulness in the adoption of e-training.

## العوامل المؤثرة في قبول التدريب الإلكتروني لدى أعضاء هيئة التدريس بجامعة سبها: منهج نمذجة المعادلات الهيكلية

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### الكلمات المفتاحية:

نمذجة المعادلة الهيكلية.  
التدريب الإلكتروني.  
جامعة سبها.  
أعضاء هيئة التدريس.  
نموذج TAM الموسع.  
نموذج TAM2.

### الملخص

تبحث هذه الدراسة في العوامل المؤثرة على قبول التدريب الإلكتروني لدى أعضاء هيئة التدريس بجامعة سبها باستخدام نموذج قبول التكنولوجيا الموسع (TAM2). تم جمع ما مجموعه 74 استجابة باستخدام نماذج Google فيما يتعلق بالمعايير الذاتية، والصورة، وملاءمة الوظيفة، وجودة المخرجات، وإمكانية إثبات النتائج، وسهولة الاستخدام الملموسة (PEOU)، والفائدة الملموسة (PU)، والخبرة، والتطوع، ونية الاستخدام. تم تقييم القياسات والنماذج الهيكلية عن طريق نمذجة المعادلات الهيكلية بالمربعات الصغرى الجزئية (PLS-SEM) باستخدام برنامج SmartPLS 4. وتم إثبات الموثوقية والاتساق الداخلي والصلاحية باستخدام Cronbach  $\alpha$  الذي يتراوح من 0.776 إلى 0.929 و AVE من 0.688 إلى 0.876. للصلاحية المتقاربة. وُجد أن نموذج PEOU تنبأ بالهدف الشخصي، وتنبأ كلٌّ من نموذج PEOU ونموذج PU بنية الاستخدام، وإن كان ذلك بدعم أضعف من نماذج التنبؤ المقترحة ( $\beta = 0.441, p < 0.001$ ;  $\beta = 0.284, p = 0.046$ ;  $\beta = 0.314, p = 0.033$ ). لم يتم العثور على تأثيرات هامة للمعيار الذاتي، والصورة، وملاءمة الوظيفة، وجودة المخرجات، وقابلية عرض النتائج. أظهر تحليل الاعتدال أن الخبرة والطوعية لم يكن لهما تأثير على تأثير المعيار الذاتي على الهدف الشخصي أو النية السلوكية (جميع القيم  $p > 0.05$ ، جميع قيم  $f^2 < 0.01$ ). شكل النموذج 66.5% من PU و 56.6% من التباين في النية لاعتماد التدريب الإلكتروني، مما يسلط الضوء على الاعتماد على الاعتقاد حول سهولة الاستخدام والفائدة في اعتماد التدريب الإلكتروني.

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## 1. Introduction

The adoption of technology has long been a prominent area of research. Studies in this field aim to understand, predict, and explain the factors that influence individual behaviour in accepting and using technological innovations [1]. Consequently, several conceptual models and frameworks have been developed to explore the relationship between these factors and adoption behaviour. Among these, the extended version of the Technology Acceptance Model (ETAM or TAM2) has proven highly effective in explaining technology adoption [1], [2], [3],[4], [5]; [6]; [7]; [8]; [9]; [10]; [11]; & [12], and it has become a key model for understanding the predictors of human behaviour regarding acceptance or rejection of technology [13], significantly influencing attitudes towards adopting new and engaging lifestyles [14].

Online training is a phenomenon enabled by technology, and it has gained increasing popularity in recent years due to its convenience, flexibility, and accessibility [15]; [16]. It refers to any form of learning that occurs via the internet, typically through an e-learning platform. The importance of online training was especially amplified following the COVID-19 pandemic, which compelled many individuals and organisations to transition their learning and development activities online.

Despite its growing popularity, numerous factors still influence the effectiveness of online training. This study investigates the key determinants of e-training by drawing on research from the fields of education, psychology, and technology.

## 2. Problem Statement:

The growing reliance on digital technologies and remote learning systems has accelerated the uptake of e-training. However, its effectiveness remains inconsistent due to a limited understanding of the factors that contribute to positive outcomes. Although several models, such as TAM, attempt to explain these issues, a holistic understanding of what determines individuals' adaptability to online training is lacking.

This study addresses that gap by examining factors related to the adoption of online training through the lens of the extended Technology Acceptance Model (TAM2). By incorporating critical social influence components (subjective norm, voluntariness, image) and cognitive instrumental processes (job relevance, output quality, result demonstrability), TAM2 offers improved explanatory power. These elements significantly shape learners' perceptions of usefulness and their intention to adopt online systems.

## 3. Research Significance

This study is significant for several reasons. First, it responds to the core concern in the field of learning regarding the effectiveness of e-training an issue that has become increasingly relevant in the wake of global events that have intensified the reliance on remote learning and working, making e-training more vital than ever.

Second, the findings will support educators, instructional designers, and managers in improving the design, implementation, and promotion of online training programmes, thereby enhancing training outcomes and return on investment in digital learning tools.

Finally, according to the author's knowledge, this research is the first in Libya to apply TAM2 to investigate the factors influencing the adoption of online training.

## 4. Research Questions:

Research questions are listed below:

1. Does Subjective Norm have a direct positive effect on the Perceived Usefulness of e-training?
2. Does Subjective Norm have a direct positive effect on users' Intention to use e-training?
3. Does Image positively influence the Perceived Usefulness of e-training?
4. Does Job Relevance positively influence the Perceived Usefulness of e-training?
5. Does Output Quality positively influence the Perceived

Usefulness of e-training?

6. Does Result Demonstrability positively influence the Perceived Usefulness of e-training?
7. Does Perceived Ease of Use positively influence the Perceived Usefulness of e-training?
8. Does Perceived Ease of Use positively influence the Behavioral Intention to use e-training?
9. Does Perceived Usefulness positively influence the Behavioral Intention to use e-training?
10. Does Experience moderate the relationship between Subjective Norm and Behavioral Intention to use e-training?
11. Does Experience moderate the relationship between Subjective Norm and the Perceived Usefulness of e-training?
12. Does Voluntariness moderate the relationship between Subjective Norm and Behavioral Intention to use e-training?

## 5. Research Objectives:

This research aims to examine the factors influencing the acceptance of e-training using the Technology Acceptance Model 2 (TAM2) framework. Specifically, the study seeks to assess how elements such as subjective norm, image, job relevance, output quality, result demonstrability, and ease of use affect perceived usefulness and the intention to use e-training programmes.

Additionally, the study evaluates how perceived usefulness and perceived ease of use affect users' behavioural intention. It also contributes to the literature by investigating the moderating roles of experience and voluntariness on the relationship between subjective norm, perceived usefulness, and behavioural intention. This offers a more comprehensive understanding of e-training acceptance within organisational contexts.

## 6. Research Hypotheses:

The following are the hypotheses of the study:

- H1:** Subjective Norm will positively influence Perceived Usefulness of e-training.
- H2:** Subjective Norm will positively influence Intention to use e-training.
- H3:** Image will positively influence Perceived Usefulness of e-training.
- H4:** Job Relevance will positively influence Perceived Usefulness of e-training.
- H5:** Output Quality will positively influence Perceived Usefulness of e-training.
- H6:** Result Demonstrability will positively influence Perceived Usefulness of e-training.
- H7:** Perceived Ease of Use will positively influence Perceived Usefulness of e-training.
- H8:** Perceived Ease of Use will positively influence Behavioral Intention to use e-training.
- H9:** Perceived Usefulness will positively influence Behavioral Intention to use e-training.
- H10:** Experience moderate the relationship between Subjective Norm and Intention to use e-training.
- H11:** Experience moderate the relationship between Subjective Norm will positively influence Perceived Usefulness of e-training.
- H12:** Voluntariness moderate the relationship between Subjective Norm and Intention to use e-training.

## 7. Research Methodology:

The study relies on two main approaches: the descriptive approach and the analytical approach. The descriptive approach relies on describing the phenomenon as it exists. It was used to build the theoretical framework for the study, drawing on a set of relevant previous studies and references. This enhances the comprehensive understanding of theoretical concepts related to the adoption of e-training. The analytical approach, on the other hand, relies on scientifically collecting and analyzing data to uncover relationships between variables. This study utilized a questionnaire to achieve this goal, contributing to the derivation of accurate results and the provision of

practical recommendations that help achieve the study objectives.

## 8. Population and Sample:

Partial Least Squares Structural Equation Modeling (PLS-SEM) provides a user-friendly alternative to traditional covariance-based SEM, especially when working with limited data. Unlike its counterpart, PLS-SEM doesn't demand the same rigorous sample size. A helpful rule of thumb, the "ten times rule" popularized by (Hair et al., 2013), offers a practical guide: a minimum sample size is calculated by multiplying the number of connections pointing towards the most complex concept in the model by ten. For example, in our analysis, "Intention to Use" is influenced by three direct relationships. Following this guideline, a sample size of at least 30 (3 paths x 10) would be considered sufficient. This makes PLS-SEM a more accessible option for researchers facing challenges in obtaining large datasets. The collected data, comprising 74 cases, satisfies and exceeds the sample size criteria recommended in methodological literature for PLS-SEM. This adequacy, informed by the "ten times rule of thumb" and general academic consensus, ensures a robust basis for the statistical analysis conducted.

## 9. Measures

The measurement scales were adapted from previously studied and validated measures; however, to reflect the characteristics of E-training, the measurement items were restated wherever necessary. The Participants gave their opinion to each of the total 36 statements of the Subjective Norm, Image, Job Relevance, Quality Output, Result Demonstrability, Voluntariness, Perceived Usefulness, Perceived Ease of Use, and Intention to Use constructs on a five-point Likert scale ranging from 1 being "Strongly Disagree" to 5 being "Strongly Agree". The experience was measured on binary scale (Yes – No).

## 10. Data Collection

The data was collected through a structured questionnaire conducted via Google Forms between November 2024 to January 2025. The questionnaire was in both Arabic and English and had two main sections: (1) demographic details which included items such as gender, age, academic rank, years of experience, and faculty affiliation, and (2) multi-item scales adapted from previously validated Technology Acceptance Model (TAM) studies on Perceived Ease of Use, Perceived Usefulness, Subjective Norm, Image, Job Relevance, Output Quality, Result Demonstrability, Experience, Voluntariness, Intention to Use.

The survey link was sent to academic staff at Sebha University through the official email. In the invitation message, participants were provided with the objectives of the study, assured of the anonymity and confidentiality of their responses, and made aware that their participation was voluntary. To increase response rates, two reminder emails were sent a week apart. A total of 74 valid responses were obtained.

## 11. Data Analysis

SmartPLS 4 was used as the primary tool for data entry and analysis (only demographics were obtained using SPSS V.20). This software enables a variety of appropriate statistical tests to be conducted, facilitating the extraction of accurate and reliable results. The analysis will enable to investigate the factors that influence acceptance of e-training using the Technology Acceptance Model 2 (TAM2) framework and help achieve the established research objectives.

## 12. Previous Studies:

### 12.1.Hashim (2008): "Factors Influencing Online Training Acceptance in Malaysia: Application of the Technology Acceptance Model"

This study aimed to determine the acceptability of online training among a convenience sample of 261 employees in Malaysia using the technology acceptance model. The study used a self-developed questionnaire with a five-point Likert scale. The results showed that Malaysian employees accept online training to some extent, despite their low internet usage. Perceived ease of use, perceived convenience, and perceived usefulness were found to be positively related to participants' attitudes toward adopting online training. These findings

mirror Western studies and suggest that the technology acceptance model, developed in the West, is also applicable in Malaysia [15].

### 12.2.Park (2012): "A Study of the Determinants of Construction Professionals' Acceptance of Online Training: An Extension of the Technology Acceptance Model"

The study aimed to examine the factors influencing the success of implementing an online training system in the construction sector. Data collected from a sample of 408 construction professionals were used to test hypothesized relationships based on the Technology Acceptance Model (TAM). This study is the first to systematically survey the acceptance of online training in the construction sector, using the Technology Acceptance Model (TAM) to examine the determinants of online training acceptance by construction professionals. The results demonstrate that the proposed model successfully explains how construction professionals accept online training. This study provides insights into the acceptance of online training by construction professionals [18].

### 12.3.Zainab (2016): "The Mediating Effect of Perceived Usefulness and Perceived Ease of Use on the Acceptance of E-Training in the Nigerian Civil Service"

This study examined the mediating effects of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) on the acceptance of e-training in the Nigerian Civil Service. The Technology Acceptance Model (TAM) modified for developing countries was used to examine the influence of perceived cost, computer self-efficacy, technological infrastructure, internet facilities, power supply, organizational support, technical support, and government support on the acceptance of e-training. A cross-sectional research design was used, and data were collected from 450 heads of departments in federal ministries in the North Central and North Western zones of Nigeria. Partial least squares (PLS) structural equation modeling was used for analysis, testing both the measurement model and the structural model of the research framework. The results of the measurement model analysis indicated the reliability and validity of the study constructs. The results of the structural model indicated that out of the 26 hypothesized relationships, only 13 were supported: 9 for direct relationships and 4 for mediated relationships. PU, PEOU, perceived cost, and technological infrastructure were found to be significantly related to e-training acceptance. Similarly, computer self-efficacy, technological infrastructure, power supply, and technical support were significantly related to PEOU. Furthermore, PU was found to partially mediate the relationship between PEOU and e-training acceptance. PEOU also partially mediated the relationship between technological infrastructure but fully mediated the relationship between power supply, technical support, and e-training acceptance. These results demonstrated the importance of these factors in encouraging the adoption of e-training across various departments and agencies in the Nigerian Civil Service [19].

### 12.4.Akaki & Mansor (2017): "Interactivity and Trust as Precursors to Intention to Use e- Training in Nigeria: A Structural Equation Modeling Approach"

Its aim was to predict employees' intention to use an e-training system by extending the Technology Acceptance Model (TAM) using interactivity and trust. Methods: Two hundred and fourteen employees participated in the study, and structural equation modeling was used for analysis. Results: The results of structural equation modeling reveal that interactivity, trust, perceived usefulness, and perceived ease of use have direct and positive effects on employees' intention to use e-training. Perceived ease of use also appears to have no effect on perceived usefulness, while trust has the strongest indirect effects on employees' intention. Furthermore, the results of an Importance and Performance Mapping Analysis (IPMA), which compares the contributions of each construct to the importance and performance of the model, indicate that to predict intention to use e-training, priority should be given to trust and perceived usefulness [20].

### 12.5.Suanmali (2018): "Factors Influencing Employee Motivation to Use E-Training in the Manufacturing Sector in Thailand"

The study examined the current implementation of e-training in manufacturing firms in Thailand and identified the significant factors influencing employees' intention to use e-training. Data was collected randomly using a self-administered questionnaire. Four hundred



questionnaires were collected from employees in manufacturing firms and analyzed using factor analysis and multiple regression. The results indicate that there are seven significant factors influencing e-training adoption by manufacturing organizations: trust, reward, ease of use, social norms, attitude, virtual training, and level of education [21].

### 12.6.Jaziri & Touhami (2018): "Predicting User Acceptance of an Entrepreneurship E-Training Platform: Evidence from Tunisia"

Study aimed to develop an innovative integrated model based on the Theory of Planned Behavior (PBT) and the Technology Acceptance Model (TAM) to examine the underlying determinants of the latent constructs of acceptance of using an e-training platform. Troni for Entrepreneurship in Tunisia. Structural equation modeling (SEM) was applied to explore the relationships between latent constructs and examine their direct and indirect effects on the potential acceptance of using an e-training platform for entrepreneurship. 216 survey responses were collected from students, the unemployed, and employees in the private and public sectors for the analysis. The results showed that behavioral intention and participation are positively related to the intention to use the e-training platform. However, self-efficacy and subjective norms only indirectly influence Tunisians' intention to use the platform through their behavioral intention. A study by [22] entitled "Technological Training Programs via the E-Learning Platform and Their Relationship to the Level of Technological Awareness and Attitudes of Faculty Members at King Saud University" aims to identify the content of the e-training process by analyzing the reality of the e-training process via the e-learning platform and the impact of training on developing technological awareness and attitudes. The survey method was used as a standard model for data collection from human subjects. Data were sent via a communication system after obtaining the approval of the Subcommittee on Ethics for Scientific Research for Humanities at the Deanship of Scientific Research. The research sample included (55) faculty members from King Saud University. The research results reached several conclusions, the most important of which is that technology programs increased the level of technological awareness among faculty members at the university, as well as creating a positive attitude toward using the e-training platform in training [23].

### 13. Literature Review:

Technology facilitates and enables consumers to carry out various kinds of activities that have never been performed. It transforms human activities from offline to online transactions. Technological developments support business sectors to enlarge the economy, and e-commerce is the most important aspect of the global digital economy [14]. For example, an online store platform offers a variety of features, that simplifies the process of purchasing a product for consumers. Consequently, it triggers consumers to perceive that the technology is useful and easy to use. These perceptions have an impact on the attitude toward online shopping and it influences consumers' intentions to purchase online [24]. It is worth noting that, factors introduced by TAM influence the intention to online shopping, not the actual usage that is measured, but the behavioral intention to carry out the act [25].

Also, technological advancements have greatly enhanced the learning capabilities of many individuals, as educators increasingly adopt new digital technologies for teaching [26]. With the introduction of Internet, training sessions have developed into online courses [27]. The unprecedented shift towards online learning, particularly amplified by the COVID-19 pandemic, has underscored the critical need to comprehend the factors influencing the acceptance of e-training methodologies [28]; [29]; [30]. Today, almost everybody has access to education and training materials because of the rapid development of technology, including in e-training systems that emerged as key components of the worldwide digital learning economy in recent years, and has positioned e-training as a vital component across all levels of learning, from elementary to higher education [31]; [32]; & [33]. For instance, a properly equipped e-training system has interactive modules that include multimedia, group work, and individualized instructional strategies which assist the learners in acquiring knowledge and skills more efficiently [34]. These systems enable learners to accomplish their personal academic

targets and professional goals, which is not the case using traditional methods [5]. Most learners regard these tools as supportive and easy to use for accomplishing their aims, and such perceptions influence positively their willingness to engage with e-training [35]. It should be noted that theories like the Technology Acceptance Model (TAM) tend to focus more on the underlying intention to use the e-training systems, which is a critical precursor to actual engagement and the realization of learning outcomes [25], [36]; [24].

Derived from the theory of reasoned action (TRA), Davis (1986) introduced the technology acceptance model (TAM) which meant not only to predict, but also to explain computer usage behavior [5]. TAM has been conducted by extensive literature reviews, in different application domains, across various disciplines mostly in social sciences, education, and management research; and due to its limitations (i.e. TAM ignores the social factors), TAM has developed by several researchers to include extra variable [3], [11]; [37]; & [38]. The original Technology Acceptance Model (TAM), proposed by Davis (1989), established that perceived usefulness (PU) and perceived ease of use (PEOU) are fundamental determinants of technology adoption. However, to better understand the complexities of technology acceptance, especially in organizational contexts like online training, researchers have sought to expand upon the foundational TAM. Venkatesh and Davis (2000) introduced TAM2, which significantly extends the original model by incorporating social influence and cognitive instrumental processes.

TAM2 posits that perceived usefulness (PU) is influenced by social influence processes, which include: [39]

- **Subjective Norm:** An individual's perception that important others believe they should use the technology. This is particularly relevant in organizational training settings where managerial or peer influence may be significant.
- **Voluntariness:** The extent to which technology use is perceived as optional. In mandatory training scenarios, social influence may have a stronger effect.
- **Image:** The degree to which technology use enhances one's social status. Using modern online training platforms could be seen as demonstrating technological proficiency.

Furthermore, TAM2 incorporates cognitive instrumental processes that influence PU: [39], [35], [40], [3], [41], [42], & [43].

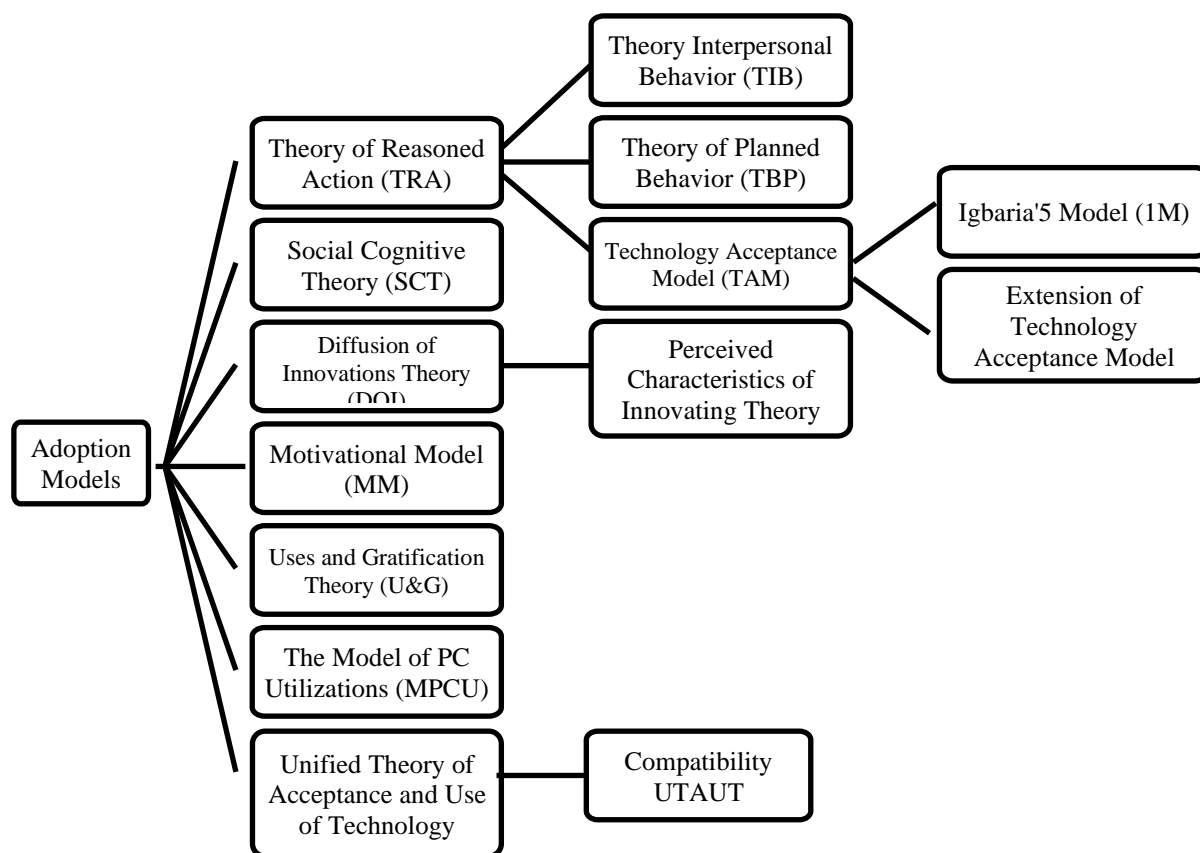
- **Job Relevance:** The degree to which the training is perceived as applicable to one's job tasks. Online training that directly improves job performance is more likely to be seen as useful.
- **Output Quality:** The perceived improvement in job performance resulting from using the training. High-quality training materials and effective delivery methods contribute to perceived output quality.
- **Result Demonstrability:** The tangibility of the benefits derived from the training. If learners can clearly see the positive outcomes of using online training, they are more likely to perceive it as useful.

While TAM2 does not directly include constructs like facilitating conditions, computer self-efficacy, system quality, and service quality, these concepts are relevant to perceived ease of use (PEOU) and perceived usefulness (PU). Facilitating conditions, such as technical support and reliable internet, can influence PEOU. Computer self-efficacy, system quality, and service quality similarly influence the overall experience and therefore perceived usefulness and ease of use. These external variables provide the context and support structure that shape users' perceptions of a technology's ease of use and its ability to enhance performance or achieve desired outcomes. The significance of these factors is further underscored when considering the broader landscape of technology acceptance theories and models. In this integrated view, external variables, while not always central to the original TAM, are often incorporated into extended TAM models and are integral components of other comprehensive frameworks like UTAUT, demonstrating their critical role in providing a more nuanced and complete understanding of technology adoption behavior beyond the foundational TAM constructs alone.

[3] synthesized models and theories about the acceptance of technology and presented them graphically (see figure 1). His study shows that UTAUT, TAM, and DOI theory are the most frequently cited works concerning Information Management. Moreover,[3] also

emphasizes that TRA, which underlies TAM, and TPB devote their attention to explaining one's behavior concerning the adoption of technology. In other words, such models explain what motivates and drives a person to accept and use newly developed technologies.

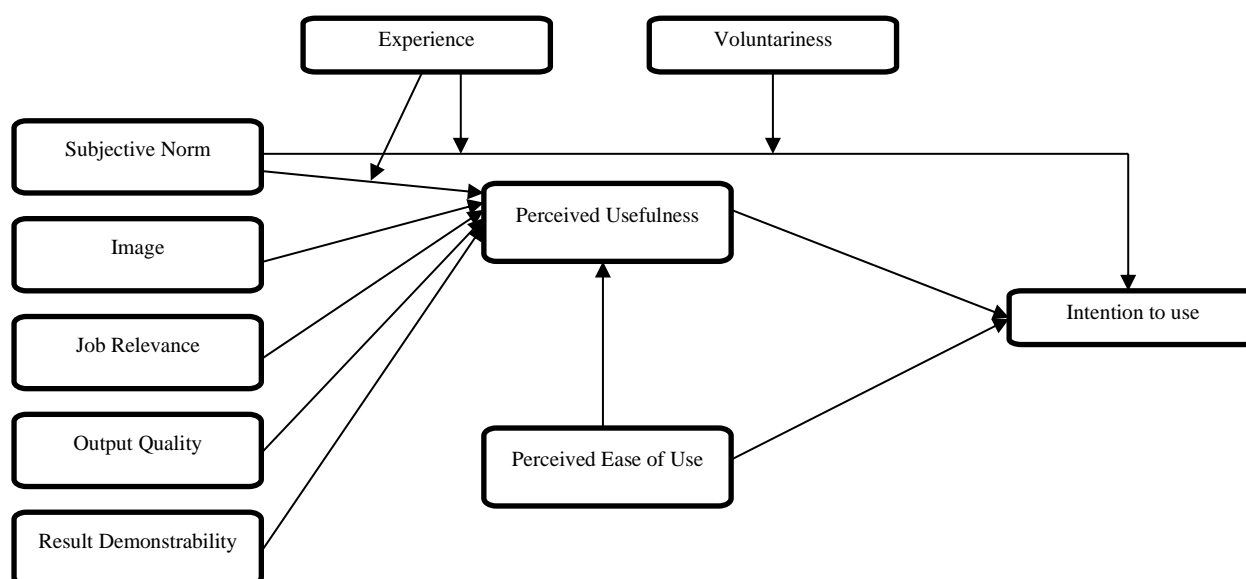
**Figure 1:** An overview of adoption/Acceptance Models.



Source: Taherdoost, 2018 [3]

Based on the former review of the related literature, this study will adopt the extended TAM known as TAM2, the figure 2 depict the study theoretical model.

**Figure 2:** The study theoretical model (Extension of technology acceptance model TAM2)



## 14. Results:

### 14.1.Respondent Profiles:

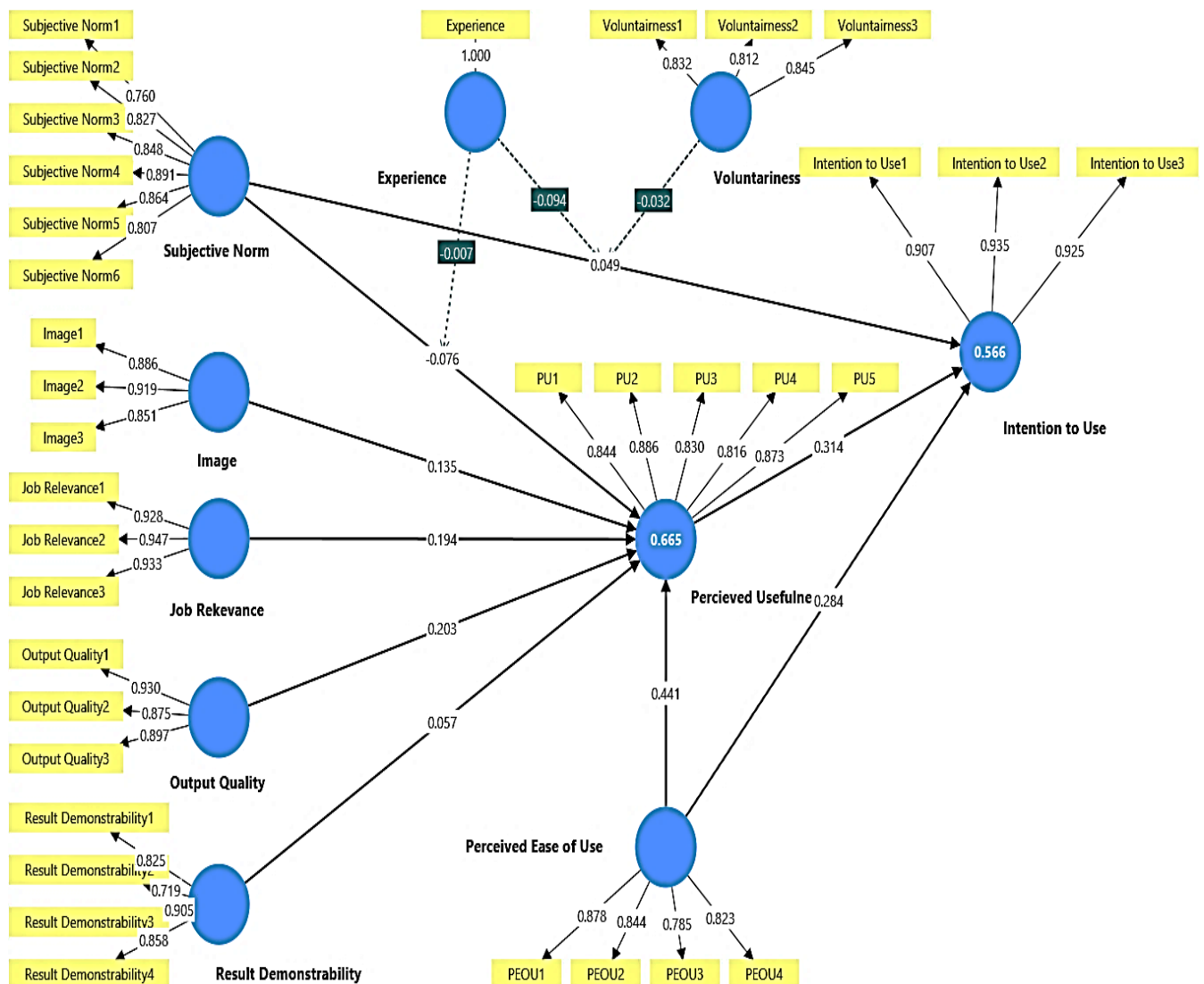
As presented in the table 1, the demographic profile which consists of 74 faculty members shows that the sample is predominantly male (70.3%), middle-aged (39.2% being 40-49), and highly job

experienced (47.3% having over 10 years of experience). Also, the dataset reveals that Masters holders make up 51.4% while PhD holders account for 48.6%, showing almost equal division. Furthermore, faculty distribution showcases significant disparity, with some Commerce & Political Science (31.1%) and Arts (20.3%) units outgrowing others, versus little to no representation in more specialized disciplines like Physical Education and Medicine ( $\leq 1.4\%$ ).

**Table 1:** Respondent profiles

Variable	Category	Frequency	Percent
Gender	Male	52	70.3
	Female	22	29.7
	Total	74	100.0
Age	20-29	6	8.1
	30-39	19	25.7
	40-49	29	39.2
	50 and over	20	27.0
	Total	74	100.0
Qualifications	Master	38	51.4
	PhD	36	48.6
	Total	74	100.0
Job Experience	1-5 Years	12	16.2
	6-10 Years	27	36.5
	More than 10 Years	35	47.3
	Total	74	100.0
Faculty	Faculty of Arts	15	20.3
	Faculty of Commerce and Political Science	23	31.1
	Faculty of Physical Education	1	1.4
	Faculty of Education, Ubari	2	2.7
	Faculty of Education, Chad	1	1.4
	Faculty of Education, Ghat	2	2.7
	Faculty of Nursing	2	2.7
	Faculty of Agriculture	6	8.1
	Faculty of Engineering	5	6.8
	Faculty of Human Medicine	1	1.4
	Faculty of Science	12	16.2
	Faculty of Information Technology	4	5.4
	Total	74	100.0

Source: SPSS Outputs

**Figure 3:** Structural equation model results showing the relationships among Experience, Volunteerism, Subjective Norm, Image, Job Relevance, Output Quality, Result Demonstrability, Perceived Ease of Use, Perceived Usefulness, and Intention to Use.

Source: SmartPLS4 outputs

#### 14.2.Data Analysis and Results:

Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed using SmartPLS software (version4) to test the proposed research model extending the Technology Acceptance Model (TAM2) for e-training acceptance. Following the guidelines by (Hair et al., 2013), the analysis involved evaluating both the measurement model and the structural model. Significance testing for the structural paths was based on T-statistics and p-values generated through inferential procedures within SmartPLS, a significance level of  $p < 0.05$  was used.

#### 14.3.Measurement Model Assessment

The measurement model evaluation (presented in table2) focused on indicator reliability, internal consistency reliability, and validity. Examination of the indicator loadings presented in the model diagram (Figure2) reveals that most indicators exhibit loadings well above the recommended threshold of 0.7 on their respective latent constructs, suggesting good indicator reliability. For instance, loadings for Perceived Usefulness indicators ranged from 0.816 to 0.886, and loadings for Perceived Ease of Use ranged from 0.785 to 0.878. Loadings for Voluntariness were also strong (0.812-0.845). Before diving into the main relationships in the study, we took a close look to ensure our questionnaire questions were truly measuring what we

intended them to. We checked two key things: whether the questions for each topic consistently measured the same underlying idea (reliability) and whether they were genuinely focused on that specific topic (convergent validity). Different tests for consistency, including Cronbach's Alpha values which ranged from 0.776 (Voluntariness) to 0.929 (Job Relevance), and two types of composite reliability ( $\rho_a$  and  $\rho_c$ ) spanned 0.783 to 0.937, both exceeding the 0.70 threshold), while composite reliabilities ( $\rho_c$ ) lay between 0.869 and 0.955, surpassing the recommended minimum, all showed that the questions within each set were reliably related. We also looked at the Average Variance Extracted (AVE) to confirm that each set of questions strongly represented its intended concept, distinct from others; here too, all scores (ranging from 0.688 up to 0.876) were well above the standard benchmark of 0.50. Notably, Job Relevance achieved the highest reliability and AVE ( $\alpha = 0.929$ ,  $\rho_c = 0.955$ , AVE = 0.876), whereas Voluntariness, despite having the lowest reliability indices, still met acceptable levels ( $\alpha = 0.776$ ,  $\rho_c = 0.869$ , AVE = 0.689). These results confirm that the latent variables are measured consistently and with strong convergent validity, supporting the robustness of the subsequent structural analysis.

**Table2: Reliability measures**

	Cronbach's alpha	Composite reliability ( $\rho_a$ )	Composite reliability ( $\rho_c$ )	Average variance extracted (AVE)
Image	0.862	0.863	0.916	0.785
Intention to Use	0.912	0.913	0.945	0.851
Job Relevance	0.929	0.937	0.955	0.876
Output Quality	0.884	0.885	0.928	0.812
Perceived Ease of Use	0.854	0.866	0.901	0.694
Perceived Usefulness	0.904	0.908	0.929	0.723
Result Demonstrability	0.849	0.873	0.898	0.688
Subjective Norm	0.912	0.912	0.932	0.695
Voluntariness	0.776	0.783	0.869	0.689

Source: SmartPLS4 outputs

The structural model was assessed by examining the path coefficients ( $\beta$ ), their corresponding T-statistics, p-values, and the coefficient of determination ( $R^2$ ) for the endogenous constructs. The results for each hypothesized path are presented below:

- **H1:** Subjective Norm  $\rightarrow$  Perceived Usefulness: The path coefficient ( $\beta = -0.076$ ,  $T = 0.567$ ,  $p = 0.571$ ) was not statistically significant. Thus, H1 was not supported.
- **H2:** Subjective Norm  $\rightarrow$  Intention to Use: The path coefficient ( $\beta = 0.049$ ,  $T = 0.391$ ,  $p = 0.696$ ) was not statistically significant. Thus, H2 was not supported.
- **H3:** Image  $\rightarrow$  Perceived Usefulness: The path coefficient ( $\beta = 0.135$ ,  $T = 1.244$ ,  $p = 0.214$ ) was not statistically significant. Thus, H3 was not supported.
- **H4:** Job Relevance  $\rightarrow$  Perceived Usefulness: The path coefficient ( $\beta = 0.194$ ,  $T = 1.335$ ,  $p = 0.182$ ) was not statistically significant. Thus, H4 was not supported.
- **H5:** Output Quality  $\rightarrow$  Perceived Usefulness: The path coefficient ( $\beta = 0.203$ ,  $T = 1.402$ ,  $p = 0.161$ ) was not statistically significant. Thus, H5 was not supported.
- **H6:** Result Demonstrability  $\rightarrow$  Perceived Usefulness: The path coefficient ( $\beta = 0.057$ ,  $T = 0.429$ ,  $p = 0.668$ ) was not statistically significant. Thus, H6 was not supported.
- **H7:** Perceived Ease of Use  $\rightarrow$  Perceived Usefulness: The path coefficient ( $\beta = 0.441$ ,  $T = 3.307$ ,  $p = 0.001$ ) was positive and statistically significant. Thus, H7 was supported.
- **H8:** Perceived Ease of Use  $\rightarrow$  Intention to Use: The path coefficient ( $\beta = 0.284$ ,  $T = 1.996$ ,  $p = 0.046$ ) was positive and statistically significant. Thus, H8 was supported.
- **H9:** Perceived Usefulness  $\rightarrow$  Intention to Use: The path coefficient ( $\beta = 0.314$ ,  $T = 2.138$ ,  $p = 0.033$ ) was positive and statistically

significant. Thus, H9 was supported.

#### 14.4.Moderation analysis:

Bootstrapping (5 000 resamples) was performed to assess the moderation effects of the proposed moderator variables (see table 3). In the proposed model, Experience and Voluntariness were theorized to influence user intention to adopt online training through their interactions with Subjective Norm, and the Experience moderate the relationship between Subjective Norm and Perceived Usefulness. However, none of these specific paths attained statistical significance in the current dataset ( $p > 0.05$  for all paths).

- **Experience** showed no significant direct impact on Intention to Use (ITU) ( $\beta = -0.046$ ) or on Perceived Usefulness ( $\beta = 0.102$ ), nor did it significantly moderate the effect of Subjective Norm on Intention to Use ( $\beta = -0.094$ ,  $t = 0.779$ ,  $p = 0.436$ , 95% CI [-0.369, 0.163]). The effect size  $f^2 = 0.006$  indicates a negligible or extremely small effect, and the inclusion of the interaction raised the  $R^2$  of ITU by 0.4% ( $\Delta R^2 = 0.004$ ). Also, on Perceived Usefulness ( $\beta = -0.007$ ,  $t = 0.050$ ,  $p = 0.960$ , 95% CI [-0.311, 0.250]). The effect size  $f^2 = 0.000$  indicates an extremely small effect, and the inclusion of the interaction raised the  $R^2$  of Perceived Usefulness by 0.8% ( $\Delta R^2 = 0.008$ ).
- **Voluntariness** likewise failed to reach significance: its direct path to Intention to Use was positive but non-significant ( $\beta = 0.263$ ,  $t = 1.604$ ,  $p = 0.109$ ), and the Voluntariness  $\times$  Subjective Norm interaction did not significantly influence Intention to Use ( $\beta = -0.032$ ,  $t = 0.280$ ,  $p = 0.780$ , 95% CI [-0.373, 0.098]). The effect size  $f^2 = 0.004$  indicates a small but not trivial, amount of unique explanatory power to the variance in Intention to Use, and the inclusion of the interaction raised the  $R^2$  of ITU by 6.7% ( $\Delta R^2 = 0.067$ ).

Thus, hypotheses 10,11 and 12 were not supported.

**Table 3: Moderation Results (Bootstrapping)**

Path	$\beta$	T statistics	P values	$f^2$	$\Delta R^2$	95% Confidence Interval (CI)
Experience $\rightarrow$ Intention to Use	-0.046	0.501	0.616			
Experience $\rightarrow$ Perceived Usefulness	0.102	1.195	0.232			
Experience x Subjective Norm $\rightarrow$ Intention to Use	-0.094	0.779	0.436	0.006	0.004	(-0.369, 0.163)
Experience x Subjective Norm $\rightarrow$ Perceived Usefulness	-0.007	0.05	0.96	0.000	0.008	(-0.311, 0.250)
Voluntariness $\rightarrow$ Intention to Use	0.263	1.604	0.109			
Voluntariness x Subjective Norm $\rightarrow$ Intention to Use	-0.032	0.28	0.78	0.004	0.067	(-0.373, 0.098)

Source: SmartPLS4 outputs



In summary, neither Experience nor Voluntariness significantly changed how Subjective Norm affects Perceived Usefulness or Intention to Use, indicating no empirically supported moderation by these variables in the present model.

#### 14.5.Explanatory Power

The model's ability to explain variance in the endogenous constructs was assessed using the  $R^2$  value. The model explained 66.5% of the variance in Perceived Usefulness ( $R^2 = 0.665$ ) and 56.6% of the variance in Intention to Use ( $R^2 = 0.566$ ). According to criteria suggested by [44], (Hair et al., 2013), these  $R^2$  values indicate substantial explanatory power for both constructs.

#### 15. Discussion

This study set out to investigate the factors influencing the adoption of e-training among faculty staff at Sebha University, using the extended Technology Acceptance Model (TAM2) as the theoretical framework. The findings provide a nuanced understanding of what drives – or hinders – faculty staffs engagement with digital training initiatives in a higher education context that increasingly demands digital competence.

The analysis confirms that Perceived Ease of Use and Perceived Usefulness are key determinants of faculty members' intention to use e-training. When the system is user-friendly and aligns with personal or professional goals, faculty staffs are more likely to engage with it. This consistent with prior research [5]; [39], reinforcing the idea that practical usability and demonstrable benefits are central to the successful adoption of e-training at Sebha University.

Conversely, the findings indicate that several contextual factors – Subjective Norm, Image, Job Relevance, Output Quality, and Result Demonstrability – did not significantly influence faculty staff perceptions. Although these constructs have shown strong effects in other institutional or cultural settings, their limited impact here may reflect an autonomous and experience-driven environment at Sebha University, where staff place greater value on system efficiency and ease of use than on peer influence or formal encouragement. This observation aligns with findings from studies such as [45] and [40], which suggest that social and contextual factors are not universally influential and may depend heavily on user profile and institutional culture.

The moderation analysis further revealed that neither Experience nor Voluntariness significantly altered the relationship between Subjective Norm and either Perceived Usefulness or Intention to Use. This implies that faculty members' decisions regarding e-training adoption are more influenced by intrinsic beliefs than by external pressure, regardless of prior experience or the optional nature of the system. The very low effect sizes ( $f^2 < 0.01$ ) and marginal increases in  $R^2$  confirm that these moderators exert negligible influence in this academic context.

Overall, the findings suggest that the successful implementation of e-training at Sebha University should rely less on institutional persuasion or peer-driven strategies, and more on the development of systems that are intuitive, relevant, and personally valuable to faculty staff. In this environment, usability and perceived benefit carry more weight than formal structures or collective norms a pattern that may typify institutions where academic independence is highly valued.

#### 16. Conclusion

This study adopted the extended Technology Acceptance Model 2 (TAM2) by incorporating key external factors to explain user acceptance of e-training systems. It identified ease of use and perceived usefulness as the most influential predictors of adoption, while variables traditionally considered significant—such as Subjective Norm and Job Relevance were less impactful in this context.

These findings highlight the need for context-sensitive approaches to technology adoption. For institutional leaders, the implication is clear: efforts to promote digital training among faculty staff should prioritise user-friendly design and clearly demonstrable personal value. Tailoring e-training platforms to individual needs and expectations is likely to yield better outcomes than relying solely on peer endorsement or institutional mandates.

#### 17. Limitation and future research:

Several limitations constrain the generalisability of these findings. Firstly, the sample was drawn from a single institution and comprised only 74 participants, limiting external validity. Future research should engage larger, more diverse samples across multiple universities and cultural settings.

Secondly, Experience was measured using a binary (yes/no) format, which likely failed to capture meaningful variations in digital proficiency. Future studies should employ continuous scales or multi-item indices to reflect differing levels of digital familiarity more accurately.

Thirdly, the study used a cross-sectional design, which restricts causal inference and does not account for the evolution of faculty staff attitudes over time. Longitudinal or mixed-methods research could uncover the dynamic pathways of technology adoption and contextual change.

Beyond these issues, future studies might investigate additional moderating or mediating variables such as facilitating conditions, computer self-efficacy, or technical support quality that shape perceptions of ease of use and usefulness. Qualitative follow-ups (e.g., focus groups or interviews) could uncover latent barriers or enablers missed by quantitative measures.

Finally, moving beyond mere intention and towards actual usage patterns and learning outcomes would offer a more complete understanding of how early acceptance translates into long-term engagement and improved academic performance.

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