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From Teaching to Employability: The Cultural and Performance Pathways to Success

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Abstract

The current research examines the possible mediating and moderating effects of Teaching Efficacy (TE) and National Culture (NC) on the nexus of Readiness of Students (RS), Interactive Online Collaboration (IOC), Faculty Training (FT), and Policy Support (PS) and the ensuing results of Student Performance (SP), Job Employment (JE), Student Competency (SC), and University Reputation (UR). We have evaluated both the direct and indirect association between the stipulated constructs by utilizing Partial Least Squares Structural Equation Modeling (PLS -SEM) on a sample of 291 respondents who were sampled using structured questionnaires. The empirical evidence suggests that TE is a medium of connecting between RS, PS, and SP and therefore enhances its impact on JE, SC, and UR. Notably, the influence of SP on JE is statistically significant in case of concurrent TE activity (O for indirect path = 0.215, p<0.001). Similarly, mediation helped students score better on SC (O = 0.327, t = 6.261, p < 0.001) and UR (O = -0.065, t = 1.911, p = 0.028). A substantial direct correlation was found between RS and TE (r = 0.282, t = 4.175, p < 0.001). The outcome of the moderate analysis indicated that Organizational Culture exerted a strong influence, leading to a positive impact on the correlation between TE and SP (O = 0.087, t = 1.994, p = 0.023). In addition, Information Culture (IC) acted as a protective factor, moderating the relationship between RS and TE (O = -0.093, t = 1.945, p = 0.026). Taking TE as the main factor and cultural elements as moderators significantly improved the model's performance, demonstrating that student results and university reputation can be enhanced when there is strong teaching competence and a positive organizational environment within these institutions.

Keywords:

Student Competencies;
Student Performance;
University Reputation;
Teaching Efficacy;
National Culture;
Employment Opportunity.

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1- Introduction

Recently, eLearning has become crucial in higher education institutes. All over the world, many scholars are connecting novel methods with eLearning to improve teaching and student outcomes. However, despite the rise in eLearning studies, there is still a deficiency of inclusive works investigating eLearning in Oman's higher education institutions [1, 2]. Nevertheless, in most of the universities, even the universities that have adopted digital platforms, the e-learning remains on the pretentious level, as the systems have been turned into repositories of sliders and assignment uploads instead of being used as dynamic teaching and learning tools. This lower use highlights a more fundamental cultural and institutional distrust in the pedagogical possibilities of e-learning as more of a convenience than an improvement in learning [2, 3].

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Of concern, this problem is even more evident in institutions of higher learning in Oman, where although there is increased interest in cloud-based and blended learning paradigms, the practice remains shallow or reactionary-driven, with the majority of the implementation of the practice gaining momentum during emergencies (such as the COVID-19 pandemic) [4, 5]. Increasing the overall benefits of digital learning in the aspects of active engagement and higher thinking [6]. The barriers in the Arab countries, most noticeably in Oman, still prevail, and they are discussed as the insufficient ICT infrastructure, the inadequate faculty training, and the low institutional policies [7-9]. What is even more disturbing is the situation when most educators and administrators consider e-learning as something less than primary, which serves the purpose of storing slides or delivering basic materials but does nothing to promote meaningful pedagogical change and improve the results of student learning. This shows that there is a devaluation of e-learning as a strategic tool, but it was only seen as a storehouse [2, 10].

At the same time, the quality of teaching and competence of the students and their employability as graduates are some of the mounting concerns in Oman concerning higher education both at the institutional and national levels, where the reputation of the institution is increasingly measured along the economic and employment avenues [3]. Educator efficacy, or the capacity of the educator to connect, inspire, and guide learners, is also classified as one of the determinants of educational triumph and employability in the brave new world. Nonetheless, it is all largely dependent on cultural standards, institutional security, and the workplace perspective of professionalism [4, 5].

Although earlier research has examined e-learning acceptance and the relationship between cultural dimensions and technology adoption in the Middle East, a significant gap still exists, as limited empirical research has explored the relationship between cultural skepticism, the under-utilization of e-learning platforms, and the teaching efficacy associated with educating students in Oman. More precisely, although the literature at large has discussed the issue of infrastructure and policy barriers, little effort has been made to explore how cultural disposition inhibits the transformational power of e-learning and, by extension, how pedagogical practice and employability performance.

The study examines the complex relationship between teaching efficacy and student competence and institutional reputation and the employment prospects with respect to the mediating effect of student performance and the moderating effect of cultural factors. The interdependency of these variables highlights the lack of in-depth frameworks that explain the dynamic interplay between them considering the higher education in the Arab Gulf region despite the fact that previous studies have examined them separately. The concept of teaching efficacy, defined as an instructor's perception of their ability to promote effective learning outcomes, has consistently been linked to improved learner engagement and academic achievement [6–8].

Similarly, both technical and soft skill competence of students has been found to be connected with employability outcomes and the reputation of universities in general [3, 5]. Nevertheless, little research has been performed empirically estimating the convergence of these relationships to affect labor market success, particularly in cultures where societal expectations, employer perceptions, and education values could vary considerably compared with those in the West [9-11]. Teaching approaches, student motivation, trial methods, and even recruiting methods could be culturally determined, but in the context of empirical studies of higher education, they are not exploited as moderating variables as much [12, 13].

This has been the gap that our study aims to fill through the proposal and testing of a holistic framework that integrates these dimensions. We argue that, in addition to mediating the relationship between teaching efficacy and employability, student performance serves as a primary mechanism through which a university's reputation is reflected in the job market. The present research is a methodical review of how the digital learning programs and especially the interactive technology based ones, analytics and personalized learning tracks are the key factors in order to achieve better teaching effectiveness and skill development [14, 15]. The study clearly presents the cultural variables as moderating variables hence accepting the fact that the same instructional procedure and teaching methods may produce different results in diverse sociocultural backgrounds. The given analytical position is particularly relevant to areas like Oman and the Arab Gulf, in general, where fast digitization, new educational principles, and constantly changing working environments meet each other [1618].

Online learning platforms like Edraak and Coursera provide Saudi Arabian and UAE students with the opportunity to learn online and, therefore, help to break the social stereotype and overcome mobility issues [19]. Sultan Qaboos University has made a massive digital transformation and the results are better QS rankings and the implementation of modern online collaboration tools which have resulted in greatly improved student engagement and workforce preparedness. E-learning programs used in companies such as Aramco and Omantel have proved to be effective in the development of professional skills and increasing work readiness [20].

The propsed work offers practical advice that will be targeted at perfecting the models of digital learning in different educational systems in the world.The contributions of this study to theory and practice are as follows:

- To provide an empirically tested mediated pathway between pedagogical quality and employment outcome that needs to be measured;
- To identify the importance of culture in determining such linkages;
- To provide actionable evidence to the policymakers and institutional leaders who can use it to promote employability and reputation through pedagogical quality.

Such a holistic approach has been quite missing in the literature, which provides an excellent opportunity to create awareness, educate on targeted interventions, and motivate research on culturally diverse academic environments.

The present study attempts to rectify this omission as it examines the mutual relationships among the teaching efficacy, student competence, institutional reputation, and employment outcome, providing an emphasis on how the cultural attitudes toward e-learning as a shallow weapon can hurt the established relationships. Namely, our model analyzes mediating factors of student performance and moderating variables of cultural and institutional beliefs regarding the value of e-learning. Therefore, the study contributes in a number of ways:

Theoretical: It enriches the current knowledge related to the topic of e-learning adoption including the little discussed aspect of cultural under prices on the tools of digital learning and relating it to efficacy and learning outcomes in pedagogy.

Pragmatic: It contains practical guidance to inform policy makers, university leaders and educators in Oman and other comparable settings on the means by which to change the cultural thinking regarding e-learning, refurbish institution policies and improve the abilities of its graduates and their capabilities of finding employment.

1-1- Research Problem and Research Gap

Teaching efficacy is known as a key driver of academic achievement. However, its direct effect on broader outcomes, such as student competence, job employment, and university reputation, remains poorly understood. There is a disconnect between effective teaching and real-world outcomes, as students who excel academically often struggle to demonstrate practical competence or consistently secure employment.

This raises the need to investigate student performance as a mediating factor that may explain how TE contributes to SC, JE, and UR.

Cultural variables, such as Organizational Culture and Information Culture, likely moderate the strength and direction of the relationships between TE, SP, and key outcomes, but these roles remain underexplored.

Current research lacks integrated models that capture the combined mediating and moderating mechanisms affecting the pathway from teaching quality to student and institutional success.

Without addressing these gaps, institutions may fail to align their teaching strategies with the long-term goals of student employability and institutional reputation.

This study aims to fill this gap by developing and testing a model that explains how TE influences SC, JE, and UR through SP, and how culture shapes these effects, utilizing Structural Equation Modeling (SEM-PLS).

1-2- Research Questions

- RQ1: What is the influence of technology readiness and teaching on efficacy and performance of students?
- RQ2: How does interactive/ online collaboration among teachers affect teaching efficacy and performance of students?
- RQ3: How does faculty training influence teaching efficacy and student performance?
- RQ4: What role does policy support play in enhancing teaching efficacy and student performance?
- RQ5: How does students' performance mediate the relationship between teaching efficacy and job employment?
- RQ6: How does teaching efficacy contribute to job employment?
- RQ7: How does teaching efficacy mediate the relationship between independent variables and student performance?
- RQ8: How does national culture moderate the relationship between interactive/online collaboration and teaching efficacy?
- RQ9: How does organizational culture influence the impact of faculty training on teaching efficacy?
- RQ10: How does information culture shape the relationship between student/technology readiness and teaching efficacy?

1-3- Research Objective (RO)

- RO1: To analyze the impact of students' and technology readiness on teaching efficacy and student performance.
- RO2: To examine the role of interactive/online collaboration in improving teaching efficacy and student performance.
- RO3: To explore the effect of faculty training on teaching efficacy and student performance.
- RO4: To evaluate the contribution of policy support in improving teaching efficacy and student performance.

- RO5: To analyze the mediating role of students' performance between teaching efficacy and job employment.
- RO6: To assess the direct and indirect impact of teaching efficacy on job employment.
- RO7: To examine the mediating effect of teaching efficacy between readiness, faculty training, collaboration, and student performance.
- RO8: To explore the moderating role of national culture in the impact of interactive collaboration on teaching efficacy.
- RO9: To assess the moderating effect of organizational culture on faculty training and teaching efficacy.
- RO10: To investigate the moderating effect of information culture on student/technology readiness and teaching efficacy.

1-4- Hypothesis (H)

- H1: Readiness (students/technology) positively influences teaching efficacy and student performance.
- H2: Interactive and online collaboration has a positive impact on teaching efficacy and student performance.
- H3: Faculty training positively affects teaching efficacy and student performance.
- H4: Policy support has a positive influence on teaching efficacy and student performance.
- H5: Students' performance mediates the relationship between teaching efficacy and job employment.
- H6: Teaching efficacy positively influences job employment.
- H7: Teaching efficacy mediates the relationship between independent variables and student performance.
- H8: National culture moderates the relationship between interactive and online collaboration and teaching efficacy.
- H9: Organizational culture moderates the relationship between faculty training and teaching efficacy.
- H10: Information culture moderates the relationship between readiness and teaching efficacy.

1-5- Synthesized Themes of Research Questions and Objectives

Table 1 presents the synthesized themes derived from the research questions and objectives.

Table 1. Synthesized Themes of Research Questions and Objectives

Thematic Group	Research Questions (RQs)	Research Objectives (ROs)	Summary Focus
Digital & Student Readiness	RQ1: Influence of readiness on TE and SP RQ10: Role of IC on RS → TE	RO1: Impact of readiness on TE and SP RO10: IC's effect on RS → TE	Examines how students' digital and learning preparedness affect outcomes, and how IC influences this.
Teaching Interventions	RQ2: IOC's effect on TE and SP RQ3: FT's influence on TE and SP RQ4: Role of PS	RO2: Role of IOC in improving TE and SP RO3: FT's effect RO4: Contribution of PS	Investigates the institutional practices (training, collaboration, policies) that support effective teaching.
Mediated Outcomes	RQ5: SP mediating TE → JE RQ7: TE mediating IVs → SP	RO5: SP's mediation between TE and JE RO7: TE's mediation of IVs → SP	Explores indirect pathways from teaching strategies to student and employment outcomes.
Cultural Influences on Education	RQ6: TE's contribution to JE RQ8: NC moderating IOC → TE RQ9: OC moderating FT → TE	RO6: Direct/indirect impact of TE on JE RO8: NC as moderator RO9: OC as moderator	Focuses on how national and organizational cultures shape educational effectiveness.

2- Background

The desired outcome is the core of the fabric that measures the success and effectiveness of any education system in the academic setting. To illustrate, cloud-based e-learning is pegged on three essential variables, namely, the reputation of the university, employment opportunities, and the competence of the students. Such measures are valid measures to gauge the effectiveness of teaching and learning methods- not just targets that have to be met under the cloth. The value and validity of education can also be identified in student competence, where they provide the knowledge and skills to graduates to enable them in the labor market, which translates to good employment and other sources of competitiveness. Hence, the competitiveness of the graduates and their increased capacity are among the highest indicators of success of a university's reputation on local and global levels, provided that this level of achievement is habitual [21].

Student performance and educational effectiveness are mediators of learning in eLearning systems. These aspects hinge on the confidence and proficiency of the teacher in imparting information via digital forums, which further influences the performance of the students [22]. The author postulates that the greater the comfort in utilizing innovative approaches, the more the educator is apt to handle students and use technology, and that in turn has the potential to make a positive impact on the performance of the students [23]. In another related work, it was found that growth and understanding go a long way in enhancing the opportunities of students becoming qualified professionals and competitive job applicants and, most importantly, help them graduate by converting effort to achievements [24].

In addition, a number of moderating factors present in this environment tend to determine the success of e-learning and learning activities. As an example, institutional culture can greatly influence the success of adopting educational techniques in the classrooms [25]. The Institutional or Organizational Culture is formulated as a set of common values, theories and practices that characterize the manner in which learners operate in an organization. It cultivates culture of innovation, change, teamwork and leadership. Thus, a university that has well-developed organizational culture can promote the concept of teamwork, professional growth, and growth mindset among teaching professionals [26]. An interesting study argues that the instructors are generally more open to adopting new educational technologies and exploring cloud-based solutions when an institution's culture actively encourages creativity [27]. National culture can also affect how individuals perceive digital learning and the value they assign to new technologies [28]. Additionally, information culture pertains to the norms, values, and practices that govern knowledge sharing and management within an organization. For instance, at a university with a strong information culture, the faculty can share best practices using institutional repositories and knowledge transparency [29]. All of these factors can either enhance or hinder the practical implementation of cloud technologies, as they affect the strength and direction of the visible relationships among the various components of the system.

The third group consists of independent variables, which are inputs that directly and indirectly affect teaching strategies and student performance. One of the most effective strategies is faculty training, for example, since providing professional development to faculty members boosts their comfort level with e-learning platforms, which benefits students' long-term success [30]. There was work to create a promising online education environment. An additional crucial factor that is heavily weighted is student and technological readiness. To use problem-solving tools effectively, students need to be digitally literate and diligent [31]. Ultimately, online and interactive collaboration that fosters teamwork and engagement encourages collaborative problem-solving, a crucial skill for success in the real world [31].

In conclusion, the model depicts a dynamic and interconnected system where the quality of inputs (training, policies, preparedness, and online collaboration) is influenced by key mechanisms (student performance and teaching effectiveness) linked to the current environment, ultimately impacting important outcomes such as student success, graduate employability, and institutional reputation. This highlights that cloud-based e-learning is a solution that needs to be integrated into the educational framework as a valid pedagogical approach in higher education institutions, as it is considered more than just a technology.

3- Literature Review

There is a fundamental shift in higher education, with the traditional system of physical learning currently being supplemented and, in some cases, substituted by online and cloud learning [32, 33]. This transformation is not only technological but also an introspective re-visitation of the relationship between teaching efficacy, student aptitude, and institutional ranking with graduate employability [34].

Nowadays, it is the burden of the universities not only to articulate information to students but present information in a system that makes them better and prepares them in ways that they will sustain careers in the future [35]. At the heart of this revolution lies the quality of the use of any new and developing tools, pedagogies and support systems to result in valuable learning. However, there is always a disconnect between teaching efficacy and the wider process-based education and career goals that institutions aim to achieve [36]. This disparity demands an exploration of such concepts as underlying and intervening variables that affect this relationship.

The national and organizational cultures may also be of impact in terms of adoption and incorporation of the educational innovations [21]. An innovation-oriented culture, in comparison with a tradition-oriented one, which is contrary to evolution, is a good example since it can speed the uptake of teaching technologies [22].

Though the unifying goals of tertiary education, employable graduates and prestigious universities are clear, the links between good teaching and all three may be complex [37]. Student performance can act as the necessary medium, balanced between teaching methods and the creation of useful skills, competences, and contributions to the society [38]. Thus, the model that integrates the issue of effective teaching, the cultural context, and student performance mediators offers a very strong resource that can assist in wrapping the enormous problems contemporary universities face.

Teaching Efficacy and Educational Outcomes:

The so-called teaching efficacy, which refers to how an instructor thinks of his or her ability to facilitate learning, is one of the fundamental aspects of educational success that has not changed over time. Based on the description of social cognitive theory by Bandura, self-efficacy is relevant in terms of effort, endurance, and eventually the performance result [39]. In academic settings, this means faculty members are more likely to innovate, overcome obstacles, and adjust to the needs of their students.

Literature confirms that teaching efficacy among teachers is positively associated with learner engagement, information retention, and academic performance [24]. Teaching efficacy, however, is not an isolated phenomenon; institutional resources, ongoing faculty development, and the provision of technological resources influence it. The proposed framework in this work highlights variables such as faculty training, policy support, and interactive or online collaboration that independently affect a teacher’s effectiveness.

Student Competence and Performance as Mediators:

Student performance, typically evaluated through grades, course completions, and skill assessments, serves as a crucial link between teaching effectiveness and educational outcomes. If the performance is high, this could indicate that achievement resulted from effective teaching and that student engagement was present [40]. Nonetheless, student competence extends beyond broad performance; it includes the application of knowledge, problem-solving abilities, and adaptability to professional settings [41]. This framework accurately identifies student performance and teaching effectiveness as mediating factors that convert upstream initiatives (such as faculty development) into downstream results (like employability).

Research confirms this connection; for instance, the principles of good practice in undergraduate education, as outlined by Chickering and Gamson, emphasize that effective teaching strategies, such as active learning and prompt feedback, significantly enhance student competence [42, 43]. Furthermore, recent studies in cloud-based learning environments suggest that students' digital literacy and preparedness impact their learning outcomes, underscoring the interconnectedness of the ecosystem [44, 45].

University Reputation and Job Employment as Outcomes:

As well as being confined to academic rankings, the reputation of a university is now also associated with the ability of graduates to acquire jobs and their practical skills [46]. An upward spiral occurs when universities that manage to combine new ways of teaching and develop high-achiever students have a better reputation, which attracts better students and faculty, thus this enhances the outcomes further [47].

Similarly, the rates of job placement can be regarded as a tangible factor of an institution success [48]. Not only are graduates sought to be knowledgeable, but they also want to have experienced them to be flexible, able to think, and cooperate, as these are the skills that are acquired with the help of effective teaching and performance-based learning.

The Moderating Role of Culture:

The three factors that influence the perception, delivery and reception of education are the national and organizational cultural aspects. The cultural dimensions theory of Hofstede has been normally utilized to explain the differences in learning styles, preferences in communication and attitude to authority in the educational context [49]. To give an illustration, collaborative learning is likely to work better in collectivist cultures whereas cultures with high power distances are still more likely to use teacher-regulated approaches.

It appropriately incorporates the national culture, organization culture, and information culture as some of the aspects that might either make the interventions successful or unsuccessful. These cultural factors influence the way independent and dependent variables are interacting, either on the side of the norms or contrary to the norms. An example can be cited where in situations where innovation is a part of the organizational culture that existed in institutions, the faculties training efforts are better positioned to result in enhanced teaching efficacy.

The Present Research's Theoretical Approach:

This paper incorporates the Social Cognitive Theory, Hofstede Cultural Dimension Theory and Constructivist Learning Theory as theoretical framework. The Spotless, Impression and Receptor theories were examined through Partial Least Squares Structural Equation Modeling (SEM-PLS). Based on this multi-layered model, the interconnections between the institutional inputs, influences of faculty behaviors, moderating factors of culture, and outcomes of students or employment are largely complicated. The notion of Teaching Efficacy (TE) derives its basis on self-efficacy which is provided by Bandura. According to this theory, this knowledge of people on their capabilities influences their action, motivation and success [50]. This study has modelled that TE plays a dominant mediating role between the institutional factors (faculty training, readiness, and policy) and student outcomes such as performance, competence and employability.

Also, using Hofstede model, this research will explore the impacts of the cultural constructs National Culture (NC), Organizational Culture (OC), and the Information Culture (IC) on the association between interventions and teaching effectiveness [51]. The theoretical construct assists in explaining the reasons why certain interventions perform better in one environment than another. The example of Constructivist Learning Theory seen in this work lies in the workings of Interactive Online Collaboration (IOC) and Student Readiness (RS). Constructivism proposes that learners develop knowledge at an active construction level through participation, exploration and interaction with the real-life tasks [52]. It uses Partial Least Squares SEM to provide empirical proof of its theoretical framework which is suitable in regard to exploratory models that have more than one mediator and moderator.

3-1- Linking Research Questions and Hypothesis

The Role of Readiness in Teaching Efficacy and Student Performance:

Student preparedness, combined with technology readiness, serves as a vital element that establishes the success levels of digital education strategies [53]. Building insufficient readiness imposes challenges for students and faculty members in their attempts to utilize digital assets, which subsequently generates undesirable outcomes in student

performance levels [54]. Our assumption suggests that readiness has a positive impact on teaching efficacy and student achievement (H1).

Interactive/Online Collaboration and Learning Outcomes:

The implementation of online collaboration systems creates active classrooms where students actively participate in learning [55]. The research indicates that students who learn through interactive methods develop better cognitive abilities and enhance their critical thinking skills [56]. The tested hypothesis demonstrates that interactive instruction leads to enhanced teaching efficacy as well as better student achievement (H2).

Faculty Training and Teaching Effectiveness:

The literature reports that teacher training on technology in instruction produces enhanced teaching quality [57]. Faculty members who receive professional education development from their institutions will achieve improved student academic achievements [58]. The statistics demonstrate that faculty training has a positive impact on the effectiveness of teaching (H3).

The Mediating Role of Teaching Efficacy:

Teaching efficacy stands as a core component that effectively predicts student achievement levels [59]. Student educational outcomes and employability improve when teachers demonstrate practical teaching abilities [60]. Teaching efficacy serves as an intermediary factor that explains how independent variables influence student performance, as per the research hypothesis (H7). A comprehensive theoretical framework requires the inclusion of teaching efficacy as a mediating element, alongside cultural factors as regulatory elements.

Cultural Moderators in Educational Settings:

In some cases, culture can play a vital role in shaping the conditions that facilitate learning and development. It was found that national cultural values can shape the educational methods used by educators. In contrast, organizational cultural norms influence the teaching staff's ability to adopt new teaching approaches, and information cultural elements define students' strategies when interacting with digital resources [61]. This study combines these elements into the research design as moderation factors (H8, H9, and H10).

4- Research Methods

The study approach is structured whereby the outcome of teaching can be evaluated on whether it helps or hinders graduate employment, outcome, and status of the university through the theory of contemplation and application.

The research focuses on the relationship between teaching efficacy, student achievement, and determining the employment rates of new graduates in Oman, as well as their skills and university prominence. It employs Structural Equation Modeling techniques to measure the indirect effects of different variables on graduate employment, university reputation, and student skill competence through a quantitative design. Figure 1 demonstrates the summary of the proposed methodology steps.

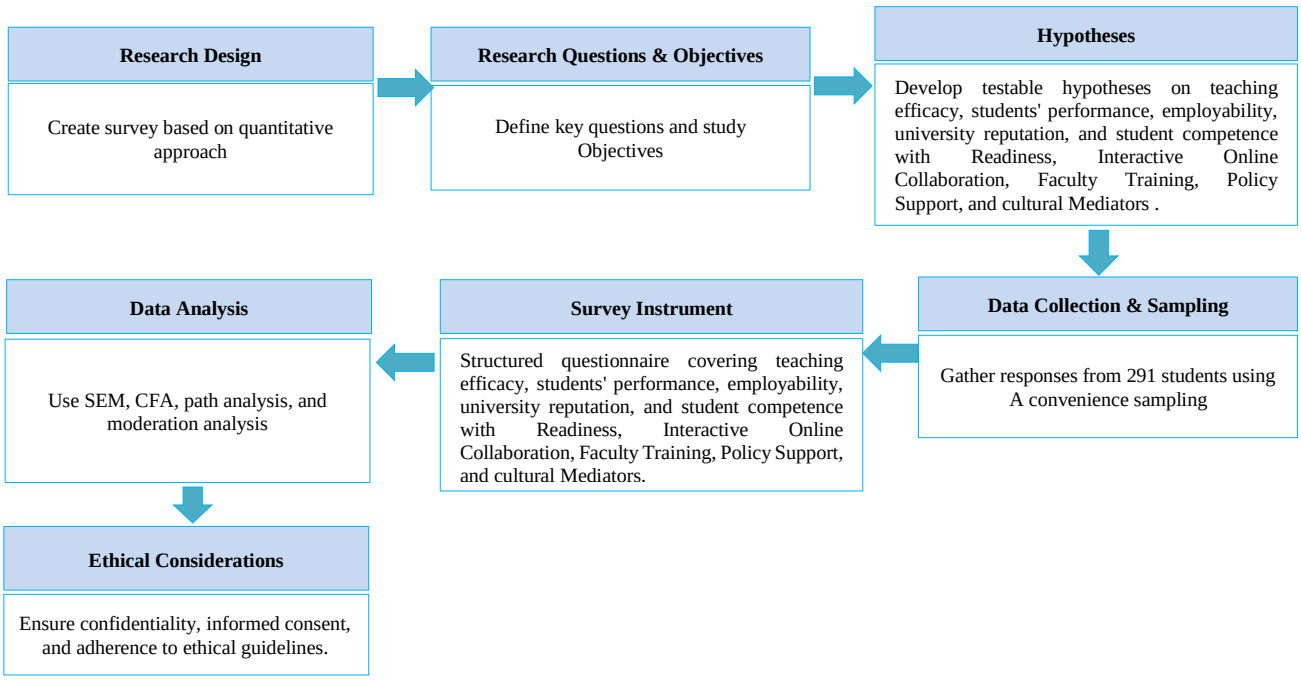

Figure 1. Research Methodology

This research study used convenience sampling because it is easy, convenient, and time-efficient since the aim of the research is to get data. The study used participants because of availability; commonly, subjects exposed to the basic requirements of inclusion set by the study had the data collected in a short duration under the available limited resources.

4-1- Research Design

The research utilized a survey design to gather information from students at the University of Buraimi in Oman. This approach provided valuable insights into the impact of teaching efficacy and students' performance on graduate job prospects, competence, and university reputation. Figure 2 presents the proposed conceptual framework.

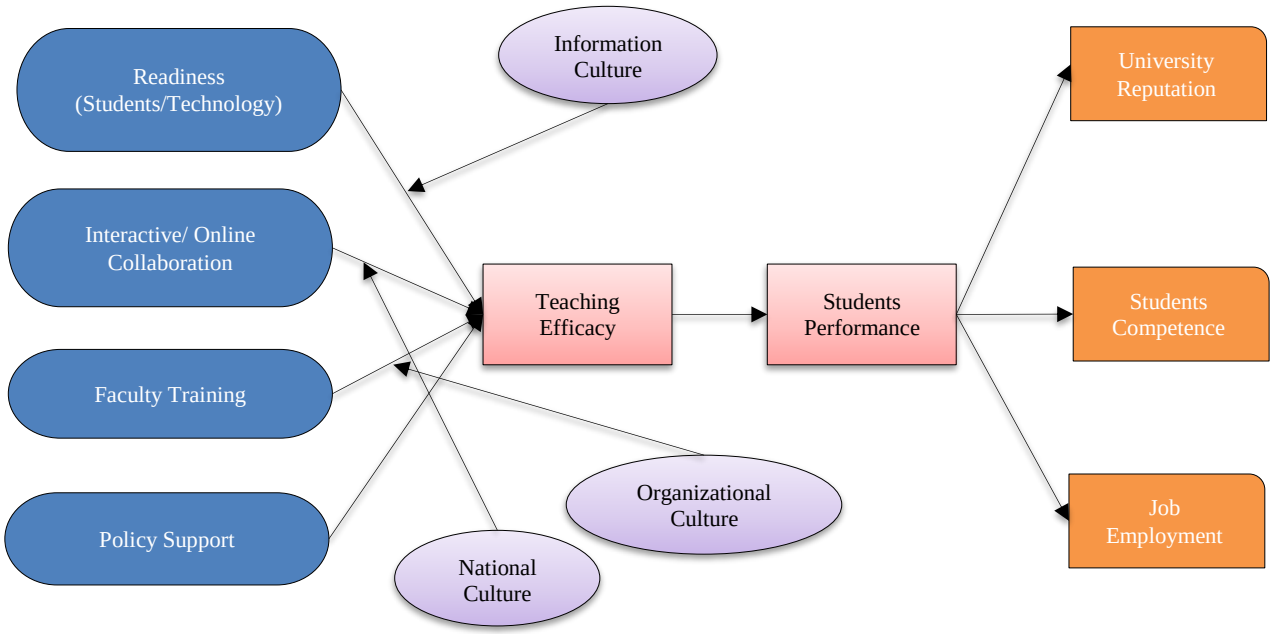

Figure 2. The developed conceptual framework

4-2- Data Collection and Sampling

The study has been based on the use of an online survey to university students. This survey led to a representative sample since 291 people gave data out of a significant sample size of 1000. Participants were selected with the help of convenience sampling since it provided an opportunity to reach willing participants with various majors and academic levels.

4-3- Survey Instrument

The designers used conventionally identified scales that are based on prior scholarly studies. In the design of the evaluation, the following components were taken into account: demographic Information (employment, not employee). The questionnaire was conducted to assess the teaching efficacy of the university and other independent variables, such as readiness, collaboration through online interactivity, training of faculty, policy support, and cultural moderators with a Likert rating assessment scale. In this section, the following questions are answered: the performance of students, their skills and placement in jobs, and the reputation of universities.

4-4- Cleaning of Data

The process of data cleaning covered the cases of no responses, missing answers, and random responses. We first checked that the lowest and highest values in the data were the same as the Likert scale, i.e. 1-5. In order to perform this; we scanned any anomalies and we tried finding any of the missing data the program resides in core fields but we could not find it. In the analysis of responses that were regarded as abnormal we used standard deviation (SD). The descriptive statistics values showed the minimum standard deviation to be 0.466 and the maximum 1.484, a factor that satisfied the standard criterion as suggested by Hair et al. [62, 63]. The standard deviation STDEV was considered to be acceptable at less than 0.25 as is indicated by the criterion that was set up.

4-5- Analytics

The research hypotheses evaluation was done using SEM techniques. The discussion included: It applied the measurement model to the Confirmatory Factor Analysis (CFA). Path analysis helped in revealing the direct and indirect connections related to various connections. Teaching efficacy served as a mediator variable in the path analysis, examining its impact on students' competence, employment opportunities, and the university's reputation.

4-6-Assessment Model: Validity and Reliability

The assessment model established both validity and reliability through the use of Cronbach's Alpha and Composite Reliability (CR). During the factor analysis, researchers eliminated any study content items with factor loadings lower than 0.700. Items with weak factor loadings, those below the 0.700 threshold, were excluded from the factor assessment. Figure 3 presents the original dataset, while Figure 4 illustrates the dataset after removing low-loading items.

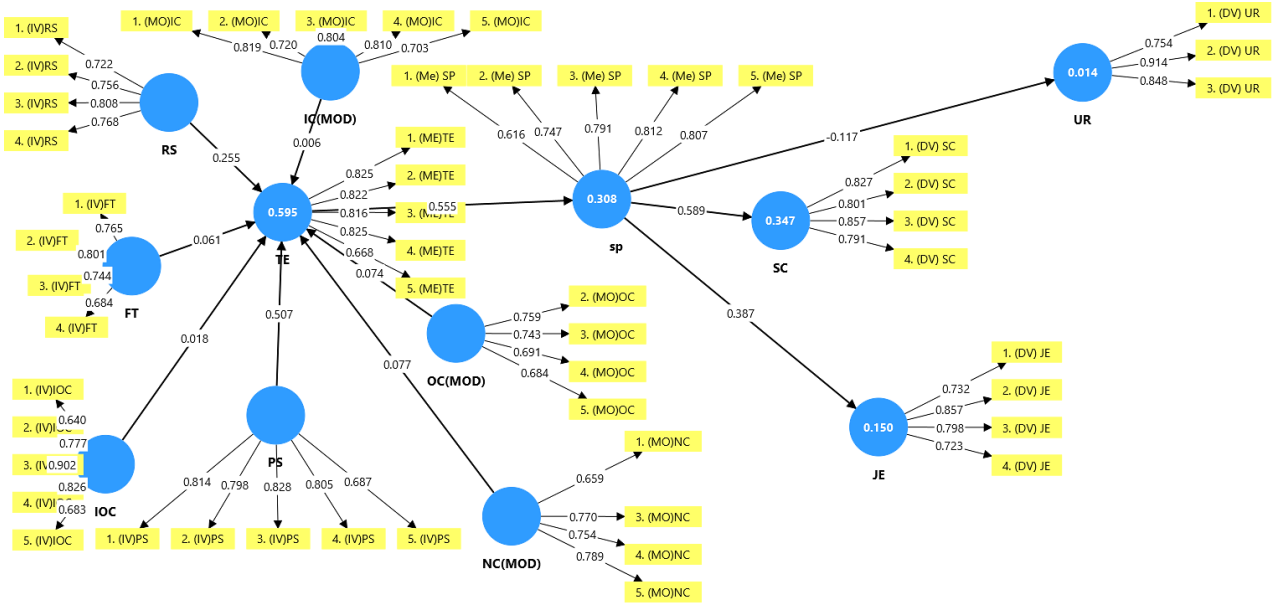

Figure 3. Conceptual Model after removing indicators below 0.7

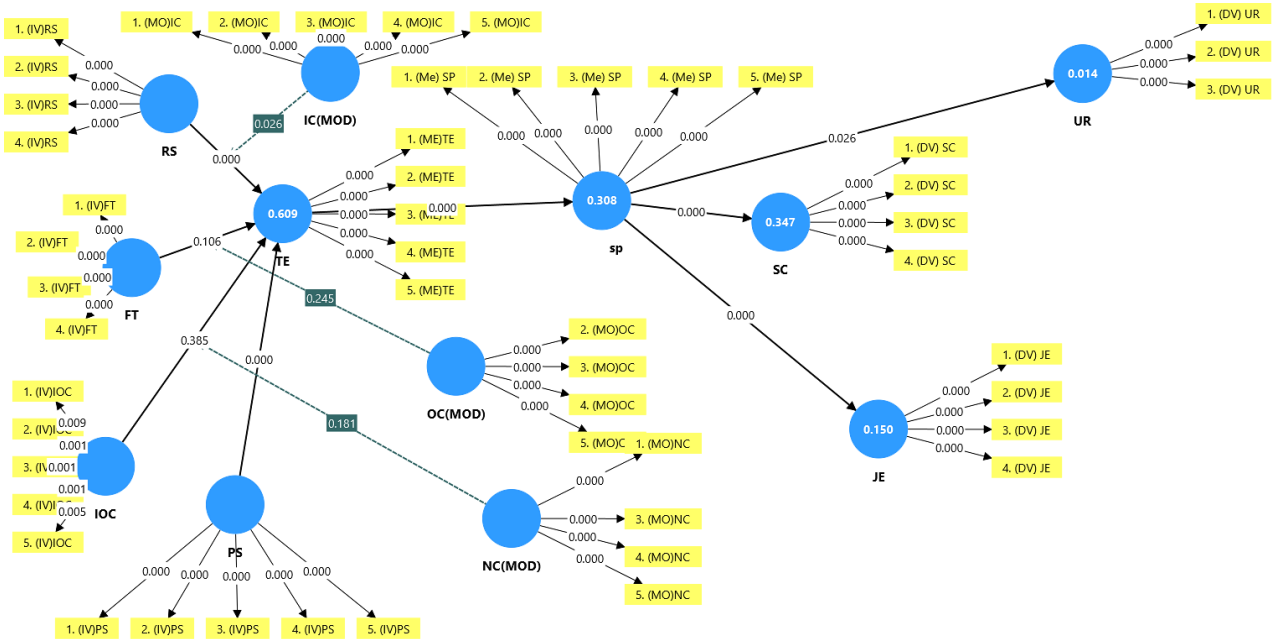

Figure 4. Bootstrapping process

The model underwent thorough validation using Average Variance Extracted (AVE) and Heterotrait-Monotrait Ratio (HTMT) tests. The first conceptual model is represented in Figure 5, and this depends on the initial survey outcomes that are interpreted through the Structural Equation Modeling-Partial Least Squares (SEM-PLS). It illustrates the theoretically predicted interrelationships between the independent variables of the study (RS, FT, IOC and PS), mediators (TE and SP), moderators (NC, OC and IC) and dependent outcomes (SC, JE and UR). The figure shows the whole theoretical model grounded on the literature and hypotheses. It has all measurement items and constructs without the filtering of the statistical strength. The figure demonstrates the anticipated direct, indirect, and moderated directives that have impacts on the teaching outcomes and employability. Nonetheless, not all indicators in this model passed the minimum psychometric test (e.g., factor loading lower than 0.70), which also indicates the necessity to further elaborate on the model and enhance concurrent validity and reliability; add to that, the simplicity of the model.

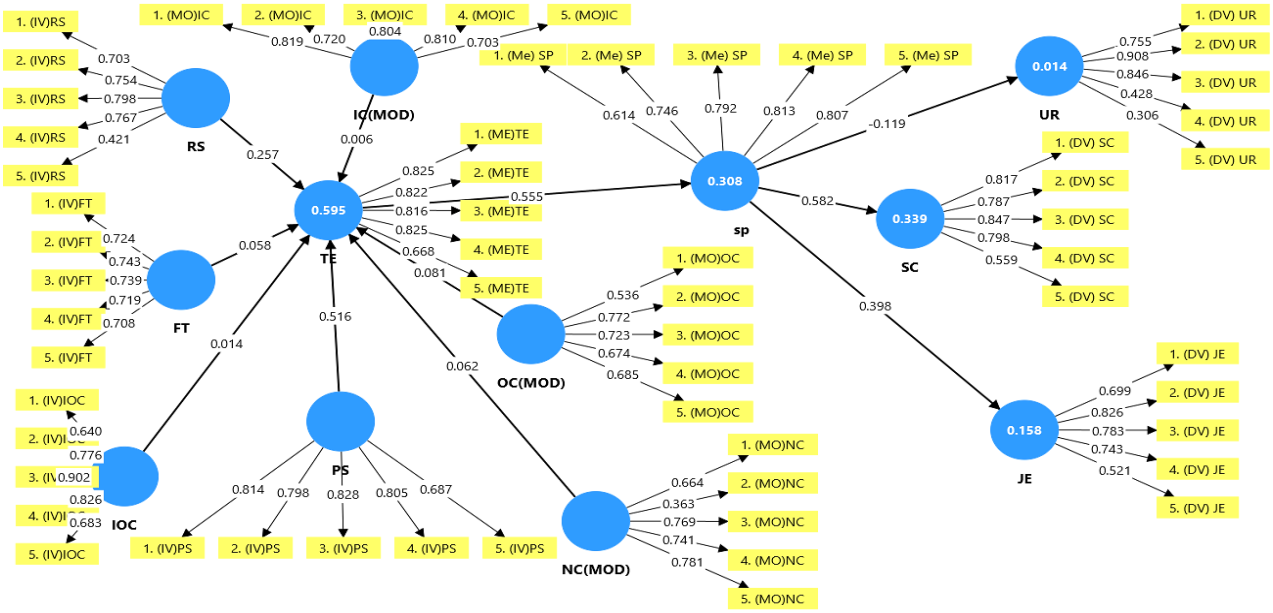

Figure 5. Conceptual Model (primary data)

The validated final model shown in Figure 3 has deleted some of the low scoring measurement items during the Confirmatory Factor Analysis (CFA). The move enhances the statistical integrity of the model. The process of refinements entails the following:

- Removal of indicators having low outer loadings (less than 0.70) and whose sub-estimates can distort the estimates on the paths.
- Improved construct reliability in crementched by Cronbach alpha and composite reliability.
- Better convergent validity, where Average Variance Extracted (AVE) was greater than 0.50.
- Decrease in the multicollinearity (Variance Inflation Factor - VIF < 3.3).

The outer loadings reveal the strength of each construct and the indicators it has in all five models. For the most part, the reliability of the constructs is satisfactory, with higher loadings observed in Models 1 to 4. A review of Model 5 reveals weak outer loadings for key dependent variables (JE, SC, UR) and one independent variable (RS), indicating that the indicators are not exceptionally reliable in this model.

Table 2 showcases the reliability and validity of each construct examined in this study. Most variables show strong internal consistency, with both Cronbach's alpha and composite reliability exceeding 0.70. All Average Variances Extracted (AVEs) meet the desirable threshold of 0.50 or higher, indicating robust convergent validity, except for NC(MOD), OC(MOD), and UR. This study concludes that, while the majority of the measurement model is reliable, some constructs may require further refinement. Therefore, future studies should consider improving or expanding the measurement variables of these constructs to enhance construct validity and improve the strength of the model.

Table 2. Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
FT	0.777	0.778	0.848	0.528
IC(MOD)	0.834	0.853	0.881	0.597
IOC	0.858	0.991	0.878	0.595
JE	0.763	0.788	0.842	0.521
NC(MOD)	0.705	0.757	0.805	0.465
OC(MOD)	0.724	0.755	0.811	0.466
PS	0.846	0.849	0.891	0.621
RS	0.733	0.770	0.824	0.493
SC	0.824	0.851	0.876	0.591
TE	0.851	0.850	0.894	0.630
UR	0.783	0.840	0.801	0.477
SP	0.814	0.833	0.870	0.575

Table 3 presents the evaluation of the measurement model, demonstrating the reliability and validity of the study's constructs. During preprocessing, we removed entries with factor loadings lower than 0.50 to improve reliability and validity. The retained loadings, ranging from 0.6 to 0.7, enhanced construct reliability without negatively impacting either the average variance extracted (AVE) or composite reliability. After refinement, Cronbach's alpha and composite reliability values were consistently above 0.70, indicating reliable item sets. The relationships among constructs strengthened, with many AVEs exceeding 0.50, suggesting that the constructs effectively measure the same concept. Throughout multiple validation rounds, the outer loadings consistently and accurately represented the indicators. The finalized model demonstrates a strong and reliable measurement structure, paving the way for further structural analysis.

Table 3. Reliability and Validity (No factor loadings lower than 0.50)

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
FT	0.740	0.746	0.837	0.562
IC(MOD)	0.834	0.853	0.881	0.597
IOC	0.858	0.991	0.879	0.595
JE	0.783	0.798	0.860	0.607
NC(MOD)	0.735	0.749	0.832	0.555
OC(MOD)	0.703	0.715	0.811	0.519
PS	0.846	0.849	0.891	0.621
RS	0.763	0.767	0.849	0.584
SC	0.837	0.839	0.891	0.671
TE	0.851	0.850	0.894	0.630
UR	0.803	0.889	0.878	0.708
SP	0.814	0.832	0.870	0.575

4-7- Discriminate Validity

Discriminant validity assessment involved two tests: the Heterotrait-Monotrait Ratio (HTMT) and the Fornell-Larcker criteria. Tables 3 and 4 present the results of the validity evaluations based on HTMT and the Fornell-Larcker criterion, respectively.

Table 4. Heterotrait-Monotrait ratio (HTMT)

	FT	IC (MOD)	IOC	JE	NC (MOD)	OC (MOD)	PS	RS	SC	TE	UR	SP
FT												
IC (MOD)	0.094											
IOC	0.078	0.064										
JE	0.545	0.125	0.086									
NC (MOD)	0.497	0.122	0.077	0.452								
OC (MOD)	0.324	0.121	0.191	0.296	0.297							
PS	0.617	0.184	0.086	0.502	0.731	0.204						
RS	0.356	0.159	0.089	0.384	0.579	0.241	0.608					
SC	0.443	0.127	0.062	0.421	**0.878**	0.235	0.677	0.583				
TE	0.528	0.140	0.056	0.517	0.648	0.283	0.844	0.697	0.650			
UR	0.076	0.071	0.072	0.098	0.118	0.101	0.085	0.133	0.090	0.075		
SP	0.440	0.197	0.100	0.477	0.569	0.168	0.707	0.791	0.703	0.652	0.131	

The HTMT (Heterotrait-Monotrait) Table 4 reveals that most values are below 0.85, indicating adequate discriminant validity. However, one value was slightly higher at 0.878, suggesting possible overlap between NC(MOD) and SC. While high correlations up to 0.90 are permissible in studies, they are generally discouraged as they may indicate insufficient discriminant validity. Typically, constructs exhibit clear distinctions, but those close to the threshold should be scrutinized closely.

Discriminant validity is assessed using the Fornell-Larcker criterion by comparing the square roots of AVE values (shown along the diagonals) with the off-diagonal correlations between constructs. The diagonal entries in Table 5 surpass the correlations for other constructs, demonstrating that the constructs are distinctly differentiated. For instance,

the AVE square root for FT is 0.750, which exceeds its highest correlation with PS at 0.486. Similarly, JE exhibits a stronger correlation with LE (0.779) compared to PS (0.416) and FT (0.424). However, there are concerns with NC(MOD) and SC, as their correlation of 0.693 is close to the AVE square root of NC(MOD), which is 0.745; hence, results should be interpreted with caution. Overall, the model satisfies Fornell-Larcker's criterion for discriminant validity.

Table 5. Fornell-Larcker criterion

	FT	IC(MOD)	IOC	JE	NC(MOD)	OC(MOD)	PS	RS	SC	TE	UR	SP
FT	0.750											
IC(MOD)	0.046	0.773										
IOC	0.020	-0.001	0.771									
JE	0.424	0.086	-0.025	0.779								
NC(MOD)	0.360	0.064	-0.040	0.349	0.745							
OC(MOD)	0.222	0.036	0.146	0.228	0.189	0.720						
PS	0.486	0.150	0.053	0.416	0.590	0.160	0.788					
RS	0.273	0.127	-0.018	0.297	0.445	0.179	0.487	0.764				
SC	0.346	0.111	0.001	0.345	0.693	0.171	0.571	0.468	0.819			
TE	0.422	0.125	0.050	0.424	0.526	0.232	0.720	0.567	0.549	0.794		
UR	0.004	0.035	0.008	-0.078	-0.094	-0.048	0.001	-0.111	-0.074	-0.049	0.841	
SP	0.348	0.172	-0.016	0.387	0.460	0.135	0.596	0.639	0.589	0.555	-0.117	0.758

4-8- Structural Model

In the process of the investigation, the researchers produced a systematic evaluation of the hypotheses suggested by them by examining the structural model. In using mediation analytic methods, validity of the relationships between the variables depends on the specific estimates of the parameters of the structural model. The research design was strict in distinguishing direct and indirect and total effects making the research more interpretive in terms of the ability to determine the impacts of moderating variables on the nexus between independent and dependent constructs. The measurement system, on the other hand, assessed the extent and statistical significance of intervariable relationships, and, therefore, isolated the significant factors that support the empirical results. Faced with the nature of issues inherent to the mediation analysis, the investigating team was forced to question the underlining processes that produce certain model effects. Each hypothesis was also validated using a bootstrapping process the results of which are illustrated in Figure 4. The result of the hypothesis tests is presented in Tables 6 and 7.

Table 6. Testing the direct hypothesis

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
FT → TE	0.067	0.062	0.053	1.246	0.106
IC(MOD) → TE	0.017	0.030	0.042	0.400	0.345
IC(MOD) × RS → TE	-0.093	-0.083	0.048	1.945	0.026
IOC → TE	0.015	0.010	0.050	0.293	0.385
NC(MOD) → TE	0.073	0.076	0.071	1.034	0.151
NC(MOD) × IOC →TE	-0.046	-0.029	0.050	0.911	0.181
OC(MOD) → TE	0.087	0.091	0.044	1.994	0.023
OC(MOD) × FT → TE	-0.035	-0.032	0.051	0.692	0.245
PS → TE	0.491	0.497	0.080	6.168	0.000
RS → TE	0.282	0.268	0.067	4.175	0.000
SP → JE	0.387	0.391	0.062	6.247	0.000
SP → SC	0.589	0.592	0.064	9.156	0.000
SP → UR	-0.117	-0.127	0.060	1.949	0.026
TE → SP	0.555	0.557	0.055	10.172	0.000

Table 7. Testing the mediation analysis

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
TE → SP → JE	0.215	0.219	0.048	4.464	0.000
IC(MOD) × RS → TE → SP → JE	-0.020	-0.018	0.011	1.796	0.036
FT → TE → SP	0.037	0.034	0.030	1.246	0.106
IC(MOD) → TE → SP	0.009	0.017	0.023	0.402	0.344
IOC → TE → SP	0.008	0.005	0.028	0.294	0.385
NC(MOD) → TE → SP	0.040	0.042	0.040	1.022	0.153
TE → SP → SC	0.327	0.330	0.052	6.261	0.000
OC(MOD) × FT → TE → SP → JE	-0.008	-0.007	0.011	0.666	0.253
IC(MOD) → TE → SP → UR	-0.001	-0.002	0.003	0.314	0.377
OC(MOD) → TE → SP	0.048	0.050	0.024	2.004	0.023
PS → TE → SP	0.273	0.278	0.056	4.833	0.000
TE → SP → UR	-0.065	-0.070	0.034	1.911	0.028
IC(MOD) → TE → SP → SC	0.006	0.010	0.014	0.400	0.345
RS → TE → SP	0.156	0.149	0.040	3.916	0.000
OC(MOD) × FT → TE → SP → SC	-0.012	-0.011	0.017	0.676	0.250
PS → TE → SP → JE	0.105	0.109	0.030	3.469	0.000
OC(MOD) × FT → TE → SP	-0.020	-0.018	0.028	0.687	0.246
IC(MOD) × RS → TE → SP → SC	-0.030	-0.027	0.015	1.963	0.025
NC(MOD) → TE → SP → JE	0.016	0.016	0.016	0.990	0.161
OC(MOD) × FT → TE → SP → UR	0.002	0.002	0.004	0.558	0.288
NC(MOD) × IOC → TE → SP	-0.025	-0.016	0.028	0.905	0.183
IC(MOD) → TE → SP → JE	0.004	0.006	0.009	0.385	0.350
IC(MOD) × RS → TE → SP	-0.052	-0.046	0.026	1.949	0.026
IC(MOD) × RS → TE → SP → UR	0.006	0.006	0.005	1.303	0.096
RS → TE → SP→ SC	0.092	0.088	0.025	3.748	0.000
OC(MOD) → TE → SP → SC	0.028	0.030	0.015	1.955	0.025
RS → TE → SP → UR	-0.018	-0.019	0.011	1.689	0.046
OC(MOD) → TE → SP → UR	-0.006	-0.007	0.005	1.223	0.111
NC(MOD) × IOC → TE → SP→ JE	-0.010	-0.006	0.011	0.870	0.192
FT → TE → SP→ UR	-0.004	-0.004	0.005	0.935	0.175
IOC → TE → SP→ UR	-0.001	-0.001	0.004	0.242	0.404
NC(MOD) × IOC → TE → SP→ UR	0.003	0.002	0.004	0.745	0.228
FT → TE → SP→ SC	0.022	0.020	0.018	1.236	0.108
IOC → TE → SP→ SC	0.005	0.003	0.017	0.288	0.387
RS → TE → SP→ JE	0.060	0.059	0.021	2.867	0.002
FT → TE → SP→ JE	0.014	0.014	0.012	1.183	0.118
OC(MOD) → TE → SP→ JE	0.019	0.020	0.011	1.769	0.038
NC(MOD) × IOC → TE → SP→ SC	-0.015	-0.009	0.017	0.895	0.186
IOC → TE → SP→ JE	0.003	0.002	0.011	0.283	0.388
PS → TE → SP→ SC	0.161	0.165	0.040	4.002	0.000
NC(MOD) → TE → SP→ SC	0.024	0.026	0.025	0.968	0.167
PS → TE → SP→ UR	-0.032	-0.035	0.018	1.768	0.039
NC(MOD) → TE → SP→ UR	-0.005	-0.005	0.006	0.803	0.211

4-9- Ethical Considerations

Total anonymity and confidentiality of each participant was ensured throughout the research. The study project was in line with the ethical research of the University of Buraimi.

5- Results

The direct and indirect hypotheses were tested in Table 6 to determine the relationships between vital variables, revealing their significance levels, strength, and direction. The analytic results provide valuable insights into the theoretical links between variables, either supporting or refuting the original assumptions. The statistical assessment evaluates the impact of each independent variable on the dependent variable to achieve a comprehensive understanding of prediction accuracy.

5-1- Hypothesis Testing Results

The link between Faculty Training (FT) and Teaching Efficacy (TE) is positive, even though the difference is not statistically significant (t=1.246, p=0.106). The moderation of the Information Culture (IC) and Teaching Efficacy (TE) yields a small and non-significant effect (t = 0.400, p = 0.345). The Interaction between Information Culture (IC) and student readiness has a significant adverse effect on Teaching Efficacy (TE) (t = 1.945, p = 0.026).

The Interactive Online Collaboration (IOC) does not strongly affect Teaching Efficacy (TE) (t=0.293, p=0.385). On the other hand, Teaching Efficacy (TE) is positive within National Culture (NC), but does not have a significant effect (t = 1.034, p = 0.151). Moreover, no relationship was found between National Culture (as a moderator) effect on the Interactive Online Collaboration (IOC) and Teaching Efficacy (TE) (t=0.911 and p=0.181). The Organizational Culture (OC) has a positive influence on Teaching Efficacy (TE), as evidenced by a significant result (t = 1.994, p = 0.023). However, there is insufficient evidence (t=0.692, p=0.245) to demonstrate that Faculty Training (FT) affects Teaching Efficacy (TE), even when moderated by Organizational Culture (OC).

Policy Support (PS) had a powerful, significant positive influence on Teaching Efficacy (TE) (t=6.168, p<0.001). Preparedness of Students (RS) makes a substantial, positive difference in Teacher Efficacy (TE) (t=4.175, p<0.001). Employment chance after finishing studies Job Employment (JE) is greatly influenced by a Student's Performance (SP) (t=6.247, p<0.001). A strong and significant connection was found between Students' Competence (SC) and Student Performance (SP) (t = 9.156, p < 0.001). People who choose Student Performance (SP) are much more likely to value university reputation than average (t=1.949, p=0.026). Meanwhile, there is a clear, significant, strong positive link between Teacher Efficacy (TE) and Student Performance (SP) (t=10.172, p<0.001).

The effectiveness of decisions, preparation, the environment, and school results significantly impacts teaching efficacy and student outcomes. Some interactions, such as (IC × RS) and (OC → TE), are observed to be strong, while others are not.

5-2- Summary of Key Findings

Table 7 displays the mediation analysis, which examines how Students' Performance acts as a mediating variable between Teaching Efficacy and Student Competency, University Reputation, and Job Employment. This analysis consists of five key variables: Original Sample (O), Sample Mean (M), Standard Deviation (STDEV), T-statistics, and P-values.

The connection between Teaching Efficacy (TE), independent variables, and Student Performance (SP) is depicted as a mediated effect influencing Job Employment (JE), Student Competencies (SC), and ultimate results, University Reputation (UR). Teaching Efficacy (TE) appears to strengthen the pathways identified in the earlier direct effects analysis. In this case, TE significantly mediates the relationship between Student Performance (SP) and job employment (TE → SP → JE yields z=0.215, p=0.000). Similarly, the indirect effect of TE on student competencies through performance is substantial (O = 0.327, t = 6.261).

Additionally, Policy Support has a significant indirect effect on the number of teachers per school via TE (O = 0.273, t = 4.833, p = 0.000), surpassing the direct effect of TE. Similarly, RS plays a positive and significant role in supporting SP (O = 0.156, t = 3.916), as well as other key outcomes, including JE and SC.

Upon closely examining the transition from high to low levels, we observe more nuanced changes. This interaction indicates that information culture slightly undermines the relationship between readiness and outcomes by amplifying the positive influence of teaching efficacy. Additionally, a supportive organizational culture reinforces the positive mediation effect on student performance through teaching efficacy (O = 0.048, t = 2.004, p = 0.023). In summary, TE enhances key IVs, such as PS and RS, in explaining outcomes, while moderation reveals complex interaction patterns involving IC and OC.

In summary, the major finding is as follows:

- The model has Teaching Efficacy as one of the key components. It is the most anticipation of student performance, and is a very important intermediary variable between institutional policies and learning.
- Student Performance provides a transitory link between: TE and end results such as: student competence, employability and university reputation.
- It has the greatest impact on competence (beta 0.589), which shows that academic success equates into job-readiness abilities. Even the presence of collaboration tools cannot be as influential as the faculty development and encouraging policy setting.
- Cultural moderators are crucial: both Organizational Culture (OC) and Information Culture (IC) influence the strength of relationships in significant ways, especially regarding how RS and FT affect TE.
- University reputation is only weakly influenced by internal academic factors, suggesting that institutions need to consider factors beyond classroom performance to enhance their brand and public image.

Table 8 summarizes the most significant and supported findings from the mediation and moderation analysis of the framework.

Table 8. Summary of Key Supported Mediation and Moderation Hypotheses

Hypothesis	Pathway / Interaction	Effect Type	Effect Size (O)	p-value	Interpretation
H5	TE → SP → JE	Mediation	0.215	< 0.001	Student performance mediates the effect of teaching efficacy on job employment
H6 / H7	TE → SP → SC	Mediation	0.327	< 0.001	TE enhances student competence through improved performance
H4 (Indirect)	PS → TE → SP	Mediation	0.273	< 0.001	Policy support indirectly improves SP via TE
H1 (Partial)	RS → TE → SP	Mediation	0.156	< 0.001	Student/tech readiness boosts performance through TE
H9 (Partial)	OC (MOD) → TE → SP	Moderated Mediation	0.048	0.023	A strong organizational culture amplifies the effect on performance
H10	IC × RS → TE	Moderation	-0.093	0.026	High info culture weakens the link between readiness and TE
H9	OC → TE	Direct Moderation	0.087	0.023	Organizational culture directly strengthens TE

5-3- Variance Inflation Factor (VIF)

The main aim of using the Variance Inflation Factor (VIF) table is to determine the extent of multicollinearity in the predictor variables. VIF values below 3.3 are normally used to show that there is not any multicollinearity problem with respect to PLS-SEM. The VIF values shown fluctuate between 1.231 and 2.347 which indicates that there is no major collinearity. The maximum value is 2.347 and this is at an acceptable level. A significant proportion of these predictors such as TE (ME) and PS (IV) are common in models with high VIFs, meaning that they have moderate interrelations with other predictors. However, the correlation coefficients remain less than 3.3 and have no influence over the regression paths of the model occasioning multicollinearity.

5-4- Moderator Analysis

Slope in Figure 6 indicates that the impact of Faculty Training (FT) on Teaching Efficiency (TE) are stronger as Organizational Culture (OC) is greater. Increasing FT hours on each Occupancy Class level means more time that teachers spend teaching. Nevertheless, the largest impact can be found when OC is large (+1 SD) and has the smallest impact when OC is small (−1 SD). In a way, an effective workplace culture would help complement the effects of faculty training to achieve a better teaching skill. Based on the graph:

At -1 standard deviation (SD) within the 200 liter size of the organizational culture sits the Red Line depicting Organizational Culture (OC) (MOD) group. This indicates that in the case the organizational culture is weak, faculty training does not affect efficiencies of teaching in a relevant and significant way. Faculty training is increasing, but the teaching efficiency has little growth. By survey scores, Blue Line is found to carpet a normal organizational culture (OC) (MOD). This is the line between moderate Faculty Training (FT) and moderate Teaching Efficiency (TE), when the cultural support is average.

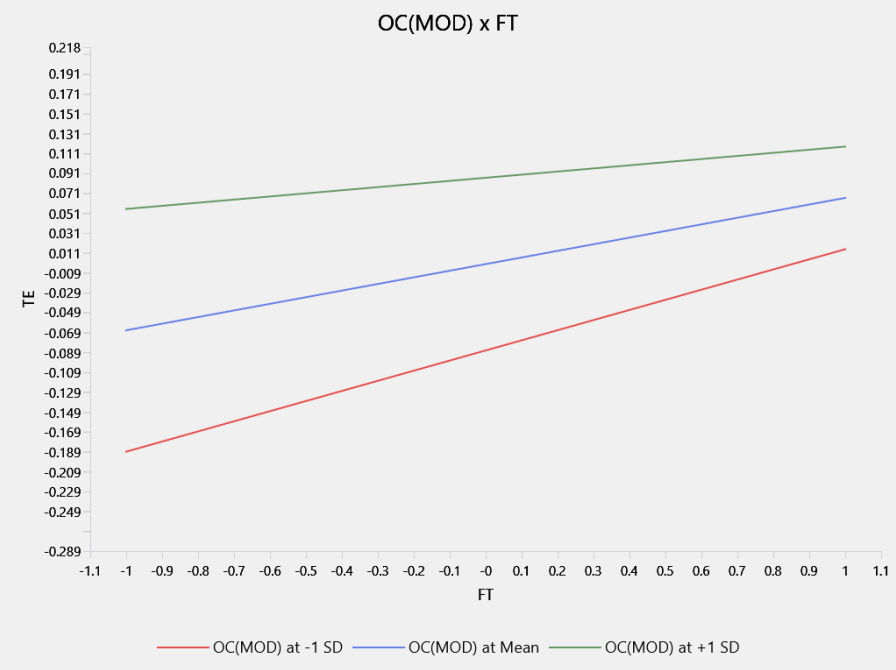

Figure 6. The relationship between Teaching Efficiency (TE) and Faculty Training (FT) with the moderation of Organizational Culture (OC)

The Green Line designates Organizational Culture (OC) (MOD) organizations as exhibiting an organizational culture at one standard deviation above the mean. The top line suggests that a strong organizational culture is closely linked to Faculty Training (FT) and Teaching Efficiency (TE). In such an environment, trained instructors can teach more efficiently.

How to Understand Color Depth for Figure 7

A steeper slope means that stronger FT has a greater effect on TE. Therefore, as the line gets higher, greater teaching results are achieved at any degree of faculty training. That is why green (high OC) enhances FT the most, whereas red (low OC) means there is a lower effect. Figure 7 illustrates how National Culture (NC) moderates the relationship between Interactive Online Collaboration (IOC) and Teaching Efficacy (TE). The lines in the model represent three stages of NC.

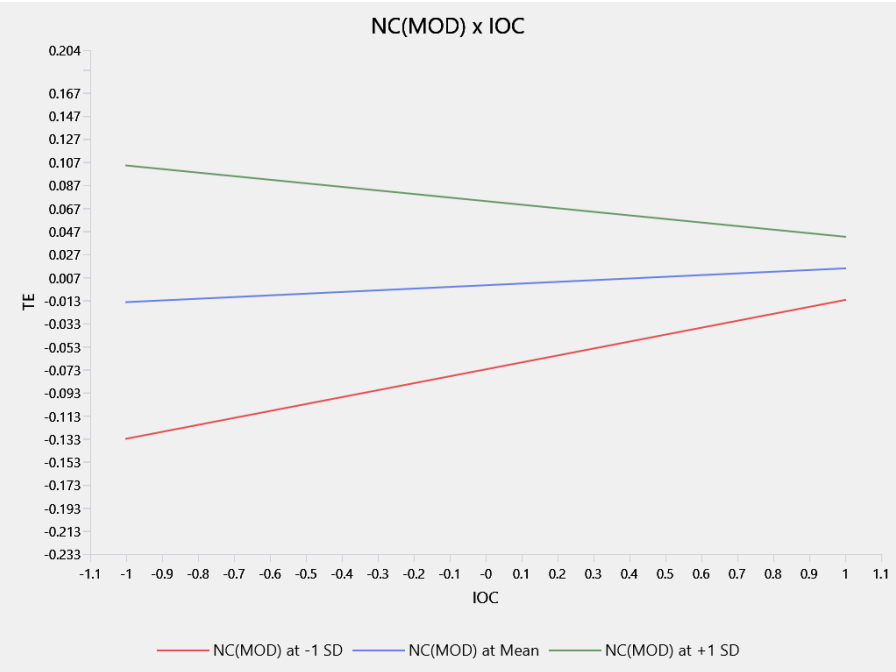

Figure 7. The relationship between Teaching Efficacy (TE) and Interactive Online Collaboration (IOC) with the moderation of National Culture (NC)

When at -1 SD, National Culture (NC) is low, while Teaching Efficacy (TE) increases as Interactive Online Collaboration (IOC) rises. There is a moderate increase in TE with IOC when examining the blue mean National Culture (NC) data.

High National Culture (NC), indicated by a Green (+1 SD) marker, primarily involves higher Teaching Efficacy (TE) at the outset, but Interactive Online Collaboration (IOC) leads to a slight decrease. The plot indicates that National Culture (NC) support for Interactive Online Collaboration (IOC) enhances Teaching Efficacy (TE). However, a strong National Culture (NC) may not produce the same positive effects as an innovation culture.

Figure 8 demonstrates how Information Culture (IC) influences the connection between Preparedness of Students (RS) and Teaching Efficacy (TE). The figure features lines indicating Information Culture (IC) scores: below the mean (red), at the average (blue), and above the mean (green). A low Information Culture (IC) results in Teaching Efficacy (TE) being perceived as low; however, this perception increases rapidly as the Preparedness of Students (RS) improves. Conversely, higher Information Culture (IC) means Teaching Efficacy (TE) develops later but at a slower rate. Thus, when clarity is lacking in teaching, additional resources significantly enhance teachers' efficiency. In contrast, if the guidance is very detailed, the effect of extra resources remains steady and less impactful. Consequently, clarity shapes how resources affect teaching efficacy.

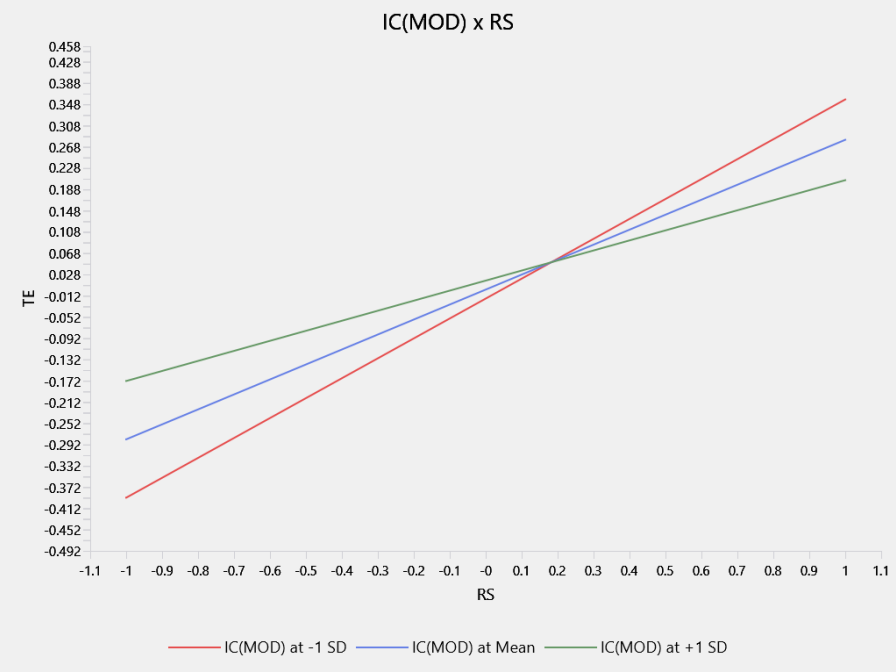

Figure 8. The relationship between Teaching Efficacy (TE) and Preparedness of Students (RS) with the moderation of Information Culture (IC)

Table 9 presents the R^2 and adjusted R^2 values for the primary constructs: Job Employment (JE), Student Competency (SC), Teaching Efficacy (TE), University Reputation (UR), and Student Performance (SP). These values indicate the proportion of the overall variance in the dependent variable explained by the model.

Table 9. R-square and adjusted R-square values

	R-square	R-square adjusted
JE	0.150	0.147
SC	0.347	0.345
TE	0.609	0.595
UR	0.014	0.010
SP	0.308	0.306

The adjusted R2 value of 0.147 demonstrates that the model explains 15 percent of the difference in job employment. In turn, the predictors in this model can explain the variation in job employment results by about 15.0% of the total variation. Both values of R^2 and adjusted R^2 are very close, so we can determine that the model is not overfit significantly.

Student Competency (SC) demonstrated improved clarity in explaining the outcome, with an R^2 of 0.347 and an adjusted R^2 of 0.345. This suggests that around 34.7% of the variance in student competence is accounted for by the model, indicating reasonable predictive power. TE (Teaching Efficacy) yielded the highest outcomes, reflected in its R^2 values of 0.609 and 0.595. This suggests that around 60.9% of the factors affecting teaching efficacy are captured by the model, highlighting its powerful predictive capability and demonstrating that the model's main variables are both dependable and efficient, as presented in Figure 9.

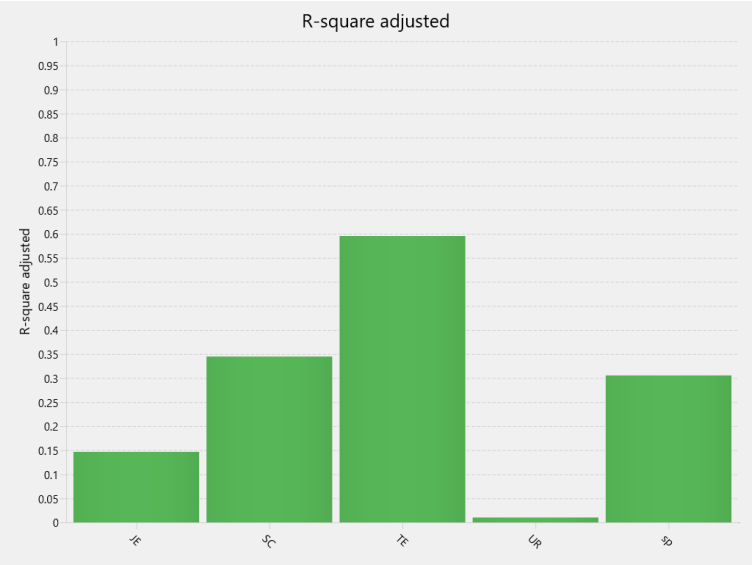

Figure 9. R-square adjusted

The University Reputation variable explains almost nothing in the model, as evidenced by its R^2 of 0.014 and adjusted R^2 of 0.010. From this, it appears that the variables are responsible for much less than 2% of changes in university reputation. The model accounts for 30.8% of student performance data. Thus, we can conclude that it moderately predicts student outcomes.

In summary, the findings as shown in Figure 9 indicate that:

- The model accounts for 61% of the variance in Teaching Efficacy (TE).
- It provides a solid explanation of student competency and performance, with about 31% to 35% of the variance explained.
- For Job Employment (JE), only 15% of the variance can be attributed to the integration of theory and data.
- The model does not adequately capture UR, suggesting that additional factors may have a greater influence.

The f-square assesses the impact of predictors on their respective outcomes. Policy Support (PS) notably enhances Teaching Efficacy (TE) ($f^2 = 0.310$). The moderation of TE by RS is deemed "moderate" ($f^2 = 0.140$), as shown in Table 10. Among the moderators, a negligible effect on TE is observed only when Organizational Culture is low; however, when paired with RS, Information Culture also exhibits a modest effect, as presented in Figure 10.

Table 10. F-squared values

	f-square
FT → TE	0.008
IC(MOD) → TE	0.001
IC(MOD) × RS → TE	0.028
IOC → TE	0.001
NC(MOD) → TE	0.008
NC(MOD) × IOC → TE	0.004
OC(MOD) → TE	0.017
OC(MOD) × FT → TE	0.005
PS → TE	0.310
RS → TE	0.140
SP → JE	0.176
SP → SC	0.532
SP → UR	0.014
TE → SP	0.445

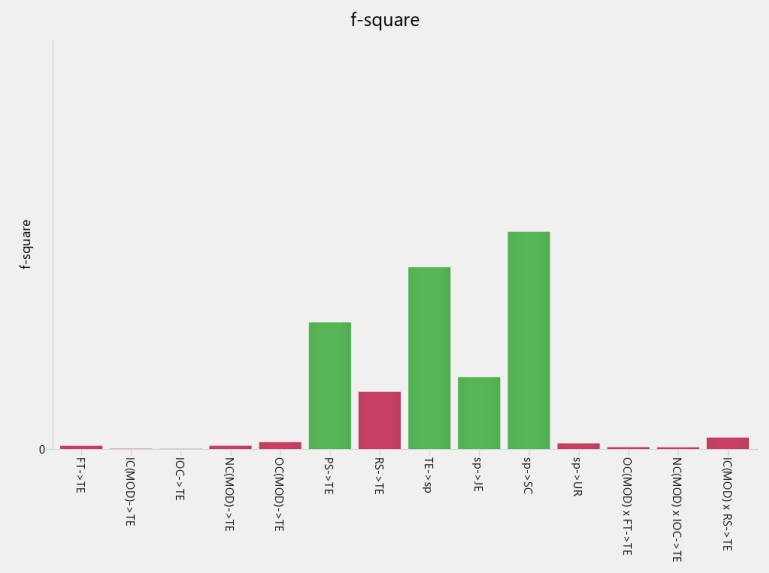

Figure 10. The value of f^2

Student Performance plays a crucial role in Student Competency and has some importance for Job Employment, but it has little effect on University Reputation. There is a significant relationship where Teacher Effect influences Student Performance ($f^2 = 0.445$). The impact of other parents and siblings on Teacher Effect is minimal.

5-5- Compare the Result with Previous Studies

The following table shows the comparison of the current factors impacting eLearning adoption with previous studies' findings, and then analyzes the results as presented in Table 11.

Table 11. Compare the current result with the previous studies

Factor	Findings from the Current Study	Findings from Previous Studies	Analysis	Citations
Teaching Efficacy (TF)& Student Performance (SP)	TF significantly expects student performance, competency, employment, and university reputation.	TF improves student motivation, engagement, and achievement. Also, it has a strong correlation with learner outcomes.	Confirms and extends prior research by connecting teaching efficacy with employability and institutional reputation.	[23, 24]
Faculty Training & Teaching Efficacy	Faculty training positively affects teaching efficacy but only under a supportive organizational culture.	Ongoing training improves instructional quality and efficacy. Institutional support is critical.	Consistent with prior findings, this study adds that the effect is moderated by culture. It also refines the conditions under which training is practical.	[16, 36, 37]
National Culture as Moderator	The connection between collaboration and teaching efficacy is negotiated through national culture. Interactive techniques do not affect efficacy so much in high power-distance cultures.	Culture influences learning mode, perceptions of authority and pedagogical performance. The classroom engagement is influenced in the context of collectivist and high power distance settings.	Expands Hofstede's cultural theory into digital pedagogy by empirically validating moderation effects in SEM modeling.	[22, 31, 40, 51]
Student Readiness & Performance	Digital literacy and motivation (readiness) is a powerful predictor of teaching efficacy and student performance with the latter mediated by readiness in the achievement of employability.	Preparedness affects the retention and learning. Associated with lifelong learning versatility, too.	The research goes beyond the previously established work to predict the readiness as a direct and mediated link to job results and institutional influence. It is also demonstrating preparedness not as a requirement alone.	[17, 32, 33]
Policy Support & Outcomes (JE, UR)	Policy support significantly enhances teaching efficacy and indirectly affects job employment and university reputation.	The impact of national and institution policy involves the net effect on educational efficiency although is usually seen as a contextual variable, one that cannot carry any direct relation to employment and reputation.	Pushes the state of discourse by demonstrating policy as a directly influenceable variable with engineering effect on the education provision, its effectiveness, and on macro-economic performance.	[20, 29, 30]
Organizational & Information Culture	OC and IC moderate how FT and RS impact TE. A strong culture enhances the translation of training and readiness into better teaching efficacy.	The aspect of culture affects the implementation of innovation and cooperation in schools. Either promotes or inhibits the adaptation of new technologies by the faculty.	Adds gradation by statistically proving on the moderation, the views on how the supportive environments enhance interventions.	[13, 14, 21]

Table 12 shows the practical action that a university can implement based on the culture variables (National, Organizational, and Information culture) moderation according to the proposed framework for this study.

Table 12. Practical University Actions Based on H8–H10 (Cultural Moderation)

Hypothesis	Cultural Moderator	Relationship Affected	Practical Steps for Universities
H8	National Culture (NC)	IOC → Teaching Efficacy (TE)	- Create culturally responsive interaction tools and exercises (e.g., guided forums, structured group work). - Train the faculty on cross-cultural interaction. - When collaborating on assignments use culturally-familiar case studies and examples. - Facilitate an institutional culture that is innovation friendly under the support of the leadership.
H9	Organizational Culture (OC)	Faculty Training (FT) → Teaching Efficacy (TE)	- Facilitate an institutional culture that is innovation friendly under the support of the leadership. - Rewards teaching experimentation (e.g. internal grants/teaching awards). - Build teaching and learning communities in which knowledge can be shared and peer support provided. - Bring together a combination of lesson-based planning and teaching freedom.
H10	Information Culture (IC)	Readiness (RS) → Teaching Efficacy (TE)	- Balance structured guidance with instructional autonomy. - Avoid rigid tech protocols; instead offer adaptable templates Foster a culture of transparent knowledge-sharing (e.g., by informal faculty, networks or online repositories).

According to the findings from this study, there are some recommendations that can be mapped with different stakeholders, such as policymakers, the university, and institutions, as in Table 13.

Table 13. Map Recommendation and Stakeholder Responsibilities

Recommendation	Stakeholder(s)	Purpose / Impact
Integrate cultural adaptation into digital learning policies	Policymakers (Ministry of Higher Education)	Make sure that the national policies are sensitive to the cultural values, as well as cooperation
Encourage an innovation-oriented culture within institutions.	University Leadership	Encourage a culture where the faculty can experiment, customize and internalize new teaching strategies
Mandate professional development for digital pedagogy	Policymakers / Universities	Increase the effectiveness of teaching in accordance with the objectives of eLearning transformation
Establish internal centers for teaching and learning excellence	Universities	Continuous training, support and peer exchange to strengthen faculty development
Promote localized collaborative learning models (e.g., culturally relevant case studies)	Instructors	Stimulate learners using strategies that are consistent with Omani social conventions and ways of learning
Streamline digital resource access while preserving autonomy in use	Universities / IT Departments	Avoid over-standardization; support creativity in e-learning content design
Develop mentorship and peer-led teaching communities	Universities / Instructors	Encourage low-cost, high-impact knowledge-sharing practices within faculties
Align national education KPIs with student employability and digital competence	Policymakers (Vision 2040 bodies)	Confirm strategic plans emphasize real-world outcomes and institutional effectiveness
Offer micro-credentials for faculty in cultural sensitivity and technology use	Universities / MOHE	Prepare educators to handle diverse student needs and eLearning environments effectively
Foster an information-sharing culture with structured and informal channels	University Management	Allow flow of best practices without over-bureaucratizing instructional methods

Also, some scalability challenges could be presented if this model were implemented in a less digitally mature education system. These challenges are shown in Table 14.

Table 14. Scalability Challenges in Less Digitally Mature Systems

Challenge	Explanation	Implication
1. Limited Infrastructure	Poor access to internet bandwidth, old hardware or access to devices.	Restricts the potential of online collaboration and online interventions in readiness
2. Faculty Digital Literacy Gap	The faculty might not be trained and experienced in the use of digital tools.	Lessens the degree of influence of faculty training on teaching efficacy
3. Resistance to Cultural Shift	The cultural barrier faced can be organizational or national as culture may be adamant to pedagogical innovation or decentralization.	Reduces the ability of positive culture to moderate the pathways in the model.
4. Policy Lag	National or institutional policies may not be aligned with digital transformation goals.	Reduces down institutional adoption and scalability of interventions.
5. Lack of Standardized Assessment Models	Incomplete capacity to track student performance and competencies in digital environments.	Weakens the ability to evaluate impact on employability and student success.
6. One-Size-Fits-All Approaches	Introduced models may not be culturally or contextually adapted.	Cause misalignment between TE strategies and local learning environments.
7. Resource Allocation Inequality	Urban-rural or public-private disparities in resources and readiness.	Delays equitable scaling of digital readiness and support services.
8. Low Stakeholder Support	The potential value of the transition might not be obvious to teachers, the students, and the administrator	Weakens the adherence to such aspects of the model as interactive collaboration or training

5-6- Novelty of Findings

Teaching efficacy is one of the most crucial factors influencing employment outcomes. The study suggests that academic institutions should prioritize improving their teaching efficacy programs over focusing on policy support and students' preparedness within the educational setting. The study recommends that policymakers and universities develop more organized and results-oriented policies to enhance teaching methods.

5-7- Recommendations

- Train Faculty for eLearning: Develop comprehensive professional development programs to equip faculty with the skills necessary to deliver engaging and effective e-learning experiences for students.
- Assist institutions in fostering a culture that emphasizes innovation, collaboration, and flexibility to enhance the success rate of e-learning programs.
- Acknowledge cultural contexts when designing e-learning: Take into account national and organizational cultural elements to meet learners' needs, ensuring programs are appropriate and genuinely beneficial.
- Establish Defined Policies: Guarantee that guidelines are in place to fund, offer technology and training, and encourage equal access to e-learning across all levels.
- Enhance students' success in eLearning by offering guidance and assistance that prepares them for technology use and inspires them to engage with the system.
- Rather than solely emphasizing technology, integrate faculty development, cultural adaptation, student engagement, and guidelines to foster sustainable and effective e-learning at your institution.

The recommendations assist educational ministries and institutions in designing an effective e-learning system that is culturally relevant and empowers students to succeed in meeting future workforce challenges.

6- Conclusion

This paper presents an in-depth investigation on the impacts of teaching effectiveness, institutional aspects, and cultural backgrounds in a united way that contributes to the overall outcome of education in higher learning institutions. With the help of a strong SEM-PLS framework, the study proves that efficacy in the teacher (TE) is a critical mediator between the core institutional inputs (i.e., student readiness, faculty training, policy support, and online collaboration). It connects them to the important student results, including performance, skills, and employment opportunity. The results show that improving teaching efficacy has a significant impact on student performance that reflects positively on their employability and skills. Nevertheless, one would also find a low relationship that exists between student performance and university reputation according to the study. It implies that institutional prestige can then depend more on externalities, or overall performance, than on classroom results. Also, there are cultural variables, such as the organizational culture (OC) and information culture (IC), which serve as important suppressors. These cultural issues have a reinforcing or weakening effect on the power of readiness and training over teaching effectiveness. In addition, they emphasize the need to use institutions to make pedagogical innovation compatible with favorable internal cultures.

Besides disclosing statistical associations, the study provides a practical and circumstantial model that can be applied to higher education institutions in developing worlds. The model assists the digital learning strategy to be balanced to the aims and objectives of the broader issues, such as employability and institutional growth. The study findings highlight the importance of not only the availability of technology but also institutions in their support of the faculty in eLearning success. It also allows a culture of innovative practices and the incorporation of teaching performance in their professional setups. Educational leaders and policymakers are to pay attention to the development of the faculty. The other expectations that the policymakers have included creating policies that increase the quality of teaching and encourage a flexible and inclusive cultural setting. Addressing both the structural and cultural issues, the institutions would be in a better position to train students to face the digital workforce in addition to improving their academic status and their social impact.

7- Declarations

7-1- Author Contributions

Conceptualization, S.A., L.Y., and B.S. ; methodology, S.A.; software, B.S.; validation, L.Y., A.M., and M.C.; formal analysis, S.A. and B.S.; investigation, M.C., A.M., and L.Y.; resources, S.A.; data curation, S.A.; writing—original draft preparation, S.A.; writing—review and editing, L.Y., M.C., and A.M.; visualization, B.S. and S.A.; supervision, L.Y., A.M., and M.C.; project administration, L.Y., A.M., and M.C.; funding acquisition, S.A. and L.Y. All authors have read and agreed to the published version of the manuscript.

7-2- Data Availability Statement

The data presented in this study are available on request from the corresponding author.

7-3- Funding and Acknowledgements

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7-4- Institutional Review Board Statement

Not applicable.

7-5- Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

7-6- Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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