SMART-GOVERNMENT INITIATIVES ON PUBLIC SECTOR PERFORMANCE: STRATEGIES EMPLOYED BY THE UNITED ARAB EMIRATES (UAE)

Abdulsalam Saleh Yaslem Saleh Alameri[1*], Ali Khatibi[2], S. M. Ferdous Azam[3], Jacquline Tham[4]

Abstract

This study aimed to assess the strategies of smart-government initiatives on enhancing public sector performance in UAE public sector organizations. The researchers collected data from 353 participants, including 191 learners and 162 instructors, using a quantitative research design. The findings suggest that successful adoption and impact of smart-government initiatives depend on various factors, such as trust, environmental factors, and public sector organization readiness. The findings also suggest further research into the integration of games in course components and the influence of moderating variables on smart-government initiatives. These findings have practical implications for public sector organizations in UAE and other countries, as they can use the study's evaluation model to assess their smart-government initiatives and improve service delivery. The study recommends that different stakeholders' opinions should be taken into account while building a robust platform for smart-government initiatives' adoption and evaluation to improve service delivery. Moreover, public sector organizations must consider these multiple factor models while evaluating the adoption and impact of smart-government initiatives.

Keywords: Smart-government initiatives, Public sector, Performance, Strategy, UAE

[1*,2,3,4,]Post Graduate Centre, Management and Science University, University Drive, Off Persiaran Olahraga, Section 13, 40100, Selangor, Malaysia

***Corresponding Author:** Abdulsalam Saleh Yaslem Saleh Alameri
Post Graduate Centre, Management and Science University, University Drive, Off Persiaran Olahraga, Section 13, 40100, Selangor, Malaysia

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Introduction

E-learning, which is facilitated by digital technology, is a form of teaching and learning that has been defined in different ways by scholars. For example, Qing et al. (2023) define e-learning as electronically assisted teaching and learning. Smart-government initiatives consist of two domains, learning and technology, with learning being the cognitive process of acquiring knowledge, and technology serving as a platform for learning to occur anytime and anywhere. According to Ehlers (2019), smart-government initiatives have five primary characteristics. These include the ability for learning to occur anytime and anywhere, learners assuming the role of organisers, learning being a never-ending process, the ability to learn and teach in communities of learning or practise, and learning occurring in both formal and informal contexts. However, Bhalalusesa et al. (2021) reported a slow adoption rate of smart-government initiatives in the UAE. Specifically, only 12.4% of 90 instructors in the Open Public Sector Organisation used the system, and just 8,000 instructors who attended training in the UAE utilized the system. These findings highlight the need for greater efforts to promote the adoption and application of such initiatives in the UAE.

The slow adoption and application of smart-government initiatives in public sector organisations in the UAE is a significant issue. According to Tossy (2017), there is no effective and exhaustive model for evaluating user acceptance, user satisfaction, and utilisation of

smart-government initiatives in public sector organisations in the UAE. This lack of evaluation models could lead to inadequate decision-making processes that may result in the inefficient use of resources and the inability to achieve the intended benefits of smart-government initiatives. Furthermore, Tossy (2017) highlighted that there is no model in the UAE that evaluates smart-government initiatives from the perspective of key stakeholders, including learners and instructors. This could result in a lack of understanding of the challenges and benefits of smart-government initiatives from the end-users' point of view.

Therefore, the development of an effective and comprehensive model for evaluating the adoption and utilisation of smart-government initiatives in public sector organisations in the UAE is required. Such a model should consider various factors such as user characteristics, context, environmental factors, and trust, as identified by Alshehhi and Dwivedi (2021) in their study on the adoption of smart-government services in the UAE. The model should also take into account the perspectives of different stakeholders, including learners and instructors, to ensure that their needs and expectations are met. The importance of considering stakeholder perspectives is emphasised by Bhalalusesa et al. (2021), who reported that only 12.4% of 90 instructors who attended training in the Open Public Sector Organisation of the UAE used the system, indicating a lack of buy-in from key stakeholders.

The absence of an effective and exhaustive evaluation model for smart-government initiatives in public sector organisations in the UAE is a significant issue. The development of a comprehensive model that considers user characteristics, context, environmental factors, trust, and stakeholder perspectives is required to ensure the successful adoption and utilisation of smart-government initiatives in the public sector organisations of the UAE.In addition, e-learning is a form of learning that employs digital technology to facilitate the transmission of knowledge content between tutors and learners or between learners. Smart-government initiatives, on the other hand, involve the use of technology to facilitate learning anytime and anywhere, with learners assuming the role of organisers and instructors serving as both content providers and moderators of the learning activities (Pambreni et al., 2019; Pushpakumara et al., 2019). The adoption of an e-learning system in public sector organisations is essential for enhancing their performance and fostering efficient and effective learning.

This study aims to address the problem of public sector organisations in the United Arab Emirates' (UAE) limited adoption and utilisation of smart-government initiatives. There is no effective and comprehensive model for evaluating user acceptance, user satisfaction, and utilisation of smart-government initiatives in UAE public sector organisations (Ahmed, 2021; Al-Aulamie, 2021; Hashim et al., 2023). In addition, there is no model in the UAE that evaluates smart-government initiatives from the perspective of key stakeholders, including learners and instructors. To promote the successful implementation of smart-government initiatives in the UAE's public sector organisations, it is necessary to resolve these issues.

A model is a collection of interconnected and interdependent phenomena components that can be expressed mathematically or graphically. Thus, a model may serve as a strategy. The adoption rate of smart-government initiatives varies between developing, African, and other subregions. Thus, public sector organisations in the United Arab Emirates prefer Moodle-based solutions to wise government initiatives (Al-Sabawy, 2021). However, the adoption and application of smart-government initiatives in UAE public sector organisations lags significantly behind. According to DeLone and McLean (1992) and Lyytinen and Hirschfeld (1987), system utilisation is one sign of effective information systems.

The slow adoption and application of smart-government initiatives in UAE public sector organisations have been a cause of concern. The country has been investing in smart-government initiatives to enhance the efficiency and effectiveness of public services, but the uptake of these initiatives has been slow. One major issue is the lack of an effective and comprehensive model for evaluating user acceptance, user satisfaction, and utilisation of smart-government initiatives in public sector organisations in the UAE. Without an effective evaluation model, it becomes challenging to understand the impact of these initiatives on public sector performance.

Another issue is the lack of a model in the UAE that evaluates smart-government initiatives from the perspective of key stakeholders, including learners and instructors. This can be detrimental to the success of smart-government initiatives as

they are primarily designed to improve learning outcomes and enhance the overall learning experience. Without understanding the views and opinions of learners and instructors, it becomes challenging to assess the effectiveness of smart-government initiatives in meeting their intended goals.

Therefore, there is an urgent need for the development of an effective and comprehensive model for evaluating the adoption and utilisation of smart-government initiatives in UAE public sector organisations. Such a model should consider factors such as user acceptance, user satisfaction, impact on learning outcomes, and stakeholder perspectives. The model should be developed in consultation with different stakeholders to ensure its effectiveness and relevance to the UAE context.

Furthermore, the slow adoption and application of smart-government initiatives in UAE public sector organisations can be attributed to the lack of an effective and comprehensive evaluation model. The development of such a model can help to improve the adoption and utilisation of smart-government initiatives and enhance the efficiency and effectiveness of public services.

Literature Review

E-learning is a term that is defined in various ways by different researchers. According to Adkins (2021), e-learning refers to any form of learning that is facilitated through the use of the Internet and other new forms of information and communication technology. Laurillard (2006) defines e-learning as any teaching and learning that is enhanced through the use of digital technology. Moore et al. (2021) define e-learning as all forms of electronically supported teaching and learning. On the other hand, deMaagd et al. (2021) define e-learning as a type of learning that employs electronic technologies to access educational curriculum outside of the traditional classroom. Mohammadi and Emdadi (2021) define e-learning as a learning process that employs internet technology to design, implement, administer, and develop learning.

In a cloud-computing environment, an e-learning system is a type of system in which the software, platform, and infrastructure are all commissioned to a dedicated vendor, from whom the institution receives a metered service on demand, provided there is an internet connection (Riahi, 2015; Ishaq and Brohi, 2015). The terms e-learning, electronic learning, and e-learning system are used interchangeably and are essentially synonymous in this study. According to Mtebe and Raisamo (2021) and Sharma and Mishra (2007), e-learning can be divided into several categories. In this regard, learning materials may be stored as hardcopy or softcopy, in softcopy using CD, DVD, portable or nonportable hard disc, and tape drive.

According to Sharma and Mishra (2007), the three components of e-learning are the source of learning materials, digital devices, and digital networks. The origin of the circulation of learning materials is the source of the learning materials. It facilitates sessions in a collaborative and interactive environment where an instructor or learner can act. The digital device is the end-user access tool, a device to send or receive learning materials and provide a means to transmit diverse content, including any type of digital device with which the user is familiar. The digital network is the link between the location where e-learning materials are accessible and the end consumers. This connection, which may be fixed or wireless, connects the source of learning materials to beneficiaries, who may be learners, tutors, or other e-learning consumers. The network may restrict users to accessing the materials only when they are in school/on campus as the location of e-learning is a limitation in this aspect. Intranet e-learning describes this type of e-learning. Internet learning, in contrast to intranet e-learning, allows the user to access e-learning from anywhere using any digital device.

This research provides information on developing countries, the adoption of e-learning, and models and theories associated with technology adoption. Developing countries are nations in need of equitable and sustainable economic and social development. Low-income countries have a Gross National Income (GNI) per capita of $995 or less, while middle-income countries have a GNI per capita between $996 and $3,945, and high-income countries have a GNI per capita of $12,196 or more. Malaysia is an upper middle-income country, while the United Arab Emirates is a low-income developing country.

The adoption of e-learning in developing countries began in the 1990s as a result of the advent of the internet and the rise of digital communication. The majority of research on e-learning adoption in developing countries has focused on the educator’s perspective, with few studies

investigating both the instructor and learner's perspectives.

This research also examines models and theories associated with technology adoption, including the Theory of Planned Behaviour (TPB), the Technology Acceptance Model (TAM), the Diffusion of Innovation (DOI), and the Unified Theory of Acceptance and Use of Technology (UTAUT). These models predict the intention and use of technology, as well as its impact on individuals and organisations, using a variety of variables. In the UAE's public sector organisations, the study seeks to identify factors for evaluating smart-government initiatives successfully.

Information technology has become integral to contemporary government operations, resulting in the development of smart-government initiatives that employ IT to improve the delivery of public services. It is crucial to evaluate the success of these initiatives in order to justify the investment and guide future enhancements. In this regard, Mtebe (2015) outlines three ways of measuring the success of smart-government initiatives: usage, user satisfaction, and return on investment (RoI).

Utilisation is an essential indicator of success in information systems, including smart-government initiatives. Several studies have linked the use of an e-learning system to enhanced learner performance (Filippidi et al., 2020; Jo et al., 2021; Naveh et al., 2020; Hashim et al., 2023). Wixom and Todd (2005) propose that technology acceptance (intention to use and actual use) and user satisfaction are two ways to measure the success of information systems.

User satisfaction is an additional essential metric for measuring the success of smart-government initiatives. The correlation between user satisfaction and system performance is significant for successful adoption and implementation (Tella, 2022; Naveh et al., 2020; Shee & Wang, 2018; Wang, 2003). Consequently, the design and implementation of smart-government initiatives must ensure user satisfaction.

The return on investment (RoI) is an additional metric for measuring the success of smart-government initiatives. This method compares the amount of output received to the amount of input invested (Mtebe, 2015). For comparisons, the output and input variables must be converted to the same unit of measurement (Urbach & Müller, 2022; Govindasamy, 2001). Nevertheless, if the investment is in monetary values, the output counterpart must also be converted to monetary values. This can be difficult because not all output elements can be converted to monetary values (Mtebe, 2015).

DeLone and McLean (2003) revised their information system model to provide a comprehensive framework for evaluating the success of an IS. The model is founded on the communication transmission concept proposed by Shannon and Weaver (1948; 1949) and the extended theory devised by Mason (1978).

The updated model incorporates semantic, technical, and effectiveness challenges that must be overcome for IS success. The semantic problem relates to the system's capacity to convey the intended meaning, whereas the technical problem entails overcoming technical obstacles such as precision, interface, and efficiency. The effectiveness issue relates to the anticipated influence on the recipient's behaviour, such as intention to use, usage, user satisfaction, and individual and organisational outcomes.

In conclusion, evaluating the success of smart-government initiatives is crucial for justifying investments and guiding enhancements. The three ways of measuring success, use, user satisfaction, and return on investment, offer distinct perspectives and necessitate distinct evaluation methods. The updated IS model by DeLone and McLean provides a comprehensive framework for evaluating IS success, taking semantic, technical, and effectiveness issues into consideration. Using these methods and frameworks, governments can effectively evaluate the success of their smart-government initiatives and enhance the delivery of public services.

The success of e-learning and smart-government initiatives has been the subject of research for a number of years, and a number of studies have measured their impact on learners and employees. The Information Systems (IS) success model, which was adapted from the DeLone and McLean model of 1992, is one method to measure success. This model identifies three significant obstacles to be overcome: semantic, technical, and effectiveness. Effectiveness encompasses individual and organisational impact as well as user acceptance, use, and satisfaction.

Tossy (2017) utilised the IS success model to measure the impact of e-learning on the achievement of learners in four UAE public sector organisations. The study found that learners' acquisition of knowledge and skills, their development as autonomous learners, and their motivation were significant determinants of their achievement.

Marjanovic, Deli, and Lalic (2016) developed a model to evaluate the success of smart-government initiatives in a manufacturing firm in an economy in transition. The study incorporated a new construct, user performance, into the DeLone and McLean (2003) model. The study validated the model using a combination of observation and survey methods and Structural Equation Modelling (SEM).

In addition, the success of e-learning and smart-government initiatives can be measured using a variety of models and constructs. The IS success model and the DeLone and McLean (2003) model are commonly used to measure the effectiveness of information systems and smart-government initiatives. Other factors, such as user performance, self-efficacy, and perceived utility, have also been found to impact the success of these initiatives. Further research is required to validate these models and identify additional factors that impact the success of e-learning and smart-government initiatives.

Materials and Methods

Data collection is the process of accumulating information to address a concern or test a hypothesis (Azam et al., 2021; Bryman & Bell, 2021). Depending on the research design and the nature of the concern, the type of data collection method used will vary.

The data collection method in this research study was survey. Using questionnaires, interviews, or other methods, a survey collects data from a sample of individuals (Oppenheim, 1992; Dewi et al., 2019; Manju et al., 2023). The survey method was chosen for this study because it permitted the collection of data from a large number of respondents in a brief amount of time (Stangor, 2021).

A structured questionnaire served as the survey instrument for this study. The questionnaire was devised on the basis of a comprehensive literature review and the research objectives. The questionnaire was divided into two sections, the first of which focused on the respondents' demographic information and the second on their concerns.

This study employed a stratified random sampling method for its sampling population. Public sector organisations in the UAE that have incorporated smart-government initiatives made up the population of interest. The population was stratified based on the emirates in the UAE, which are Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al Quwain, Ras Al Khaimah, and Fujairah. A catalogue of public sector organisations in each emirate was obtained from the official government websites, and a sample was drawn proportionally from each emirate based on population size. Using the formula provided by Azam et al., (2021), the sample size was calculated to be 353, including 191 learners and 162 instructors, using a quantitative research design.

The Google Forms platform was used to capture data through an online survey. The URL to the survey was sent via email to the selected respondents, who were given three weeks to complete it. During the period of data collection, two reminders were sent to enhance the response rate. Using descriptive statistics and inferential statistics, the collected data was analysed. The demographic information of respondents and their responses to the concerns were characterised by descriptive statistics. The hypotheses were tested using inferential statistics, such as the chi-square test and regression analysis, to determine the relationships between variables. Statistical Package for the Social Sciences (SPSS) software was utilised for the data analysis.

Research Findings

The term factor loading refers to the relationship between an observed variable (in this case, a survey item) and a latent variable (a factor). It indicates how much of the observed variable's variance the factor can explain. In Exploratory Factor Analysis (EFA), the objective is to identify the underlying factors that explain patterns of correlations between observed variables. The factor loading values derived from EFA reveal the intensity of the association between each survey item and the identified factors. In this study, factor loadings greater than 0.5 are considered significant and indicate a strong association between the survey item and the factor to which it is related.

The results of this study's factor analysis indicate that the survey items are concentrated together in

a meaningful manner, with items from the same factor having high factor loadings. This bolsters the construct validity of the survey instrument, indicating that it is measuring what it is intended to measure. In general, the results of the factor analysis suggest that the survey instrument is a reliable and legitimate instrument for assessing learners' perspectives on e-learning.

Construct validity refers to the extent to which a measurement instrument, such as a learner measurement model, accurately measures the intended latent construct (Kline, 2016). It is one of the most critical types of validity in measurement theory, as it ensures that a tool measures what it is intended to measure. Researchers use various methods to assess construct validity, including factor analysis, confirmatory factor analysis, and structural equation modelling (Byrne, 2016).

The three categories of construct validity are convergent validity, discriminant validity, and nomological validity (Kline, 2016). Convergent validity assesses the extent to which multiple measures of the same construct are highly correlated, while discriminant validity assesses the extent to which different constructs are not highly correlated (Fornell & Larcker, 1981). Finally, nomological validity assesses the extent to which the construct is related to other constructs in a theoretically meaningful way.

Absolute fit, incremental fit, and parsimonious fit are the three categories of fitness indices that are used to measure construct validity (Hu & Bentler, 1999). Absolute fit measures the degree of correspondence between the model and the data, while incremental fit measures the improvement in model fit when additional parameters are added to the model. Finally, parsimonious fit assesses the fit of the model with the fewest number of parameters possible (Kline, 2016).

Overall, assessing construct validity is essential to ensure that a measurement instrument is reliable and accurately measures the intended construct.Overall, the construct validity of the learner measurement model was adequate, indicating that it measured the intended latent construct accurately.

The learner model analyses the impact of numerous factors on e-learning adoption and satisfaction. The model proposes that instructor quality, technical system quality, system quality, environmental factors, public sector organisation readiness, learner satisfaction, intention to use, perceived benefits, trust, and actual use of e-learning platforms all play a role in determining the success of e-learning platforms.

The standardised coefficient (-beta) assesses the relative significance of each predictor variable within the model. A positive coefficient indicates that an increase in the predictor variable is associated with an increase in the outcome variable, whereas a negative coefficient indicates the opposite.

The hypothesis statements provide estimates of the impact of each predictor variable on the outcome variables. Example: According to Hypothesis H1a, instructor quality has a positive and statistically significant impact on e-learning usage, with an estimated impact of 0.181%. This suggests that a one-unit increase in instructor quality would result in a 0.181% increase in the actual use of e-learning.

Similarly, instructor quality has a significant impact on learner satisfaction, as indicated by a coefficient of 0.43. This implies that an increase in instructor quality would result in a larger increase in learner satisfaction compared to other variables in the model.

The estimated impact of technical system quality on intention to use is 0.175%, indicating that an increase in technical system quality would result in an increase of 0.175% in intention to use. This finding suggests that learners place a high priority on the quality of the e-learning platform itself when determining whether or not to utilise it.

Additionally, system quality has a positive and statistically significant influence on technical system quality, as measured by a coefficient of 0.513. This suggests that an increase in system quality would result in a greater increase in technical system quality compared to other model variables. Consequently, a high-quality e-learning system would likely lead to higher technical system quality and, in turn, greater intention to use and learner satisfaction.

Interestingly, system quality has a negative impact on intention to use, with a coefficient of -0.082. This may be due to the fact that learners are more likely to employ e-learning platforms when the system is novel and thrilling, but become less motivated to use the platform as time passes and the system becomes more familiar.

The estimated impact of learner satisfaction on intention to use is 0.705, indicating that learner satisfaction is the most important predictor variable for intention to use. This finding suggests that if learners are satisfied with the e-learning platform, they are more likely to continue using it.

Moreover, intention to use has a significant influence on trust, with an estimated impact of 0.717%. This indicates that learners who intend to use the platform are more likely to trust it, which is an important factor in their decision to use the platform.

With a coefficient of 0.097, the actual use of e-learning has a positive and statistically significant influence on learner satisfaction. This finding suggests that learners who utilise the platform are more likely to be satisfied with it, which could lead to a higher intention to use and, ultimately, a higher rate of adoption.

Additionally, the learner model provides insight into the numerous factors that affect e-learning adoption and satisfaction. The standardised coefficients (-betas) provide estimates of the relative relevance of each predictor variable in the model, with positive coefficients indicating a direct relationship and negative coefficients indicating an inverse relationship. Overall, the model suggests that instructor quality, technical system quality, system quality, learner satisfaction, intention to use, trust, and actual e-learning use are important factors to consider when designing and implementing e-learning platforms.

The purpose of this research study is to present three validated Multi-Factors Models based on learner perceptions, instructor perceptions, and hybrid models for successful evaluation of adopted smart-government initiatives and their impacts in the public sector organisations of The United Arab Emirates.

The United Arab Emirates (UAE) has implemented wise government initiatives to enhance public sector services. It is important to consider both the learner and instructor points of view in order to ensure the effectiveness of these initiatives. Factors such as the technology's usability, accessibility, and applicability are important from the perspective of the learner. Instructors, on the other hand, value factors such as training and support, as well as the ability to modify and adapt the technology to their specific requirements.

Smart-government initiatives can be evaluated from both perspectives using multifactor models. Factors like user satisfaction, system usability, and technology acceptance may be included in proposed models. With factors such as system quality, information quality, and service quality being evaluated, validated models can provide a more precise assessment of the effectiveness of the initiatives.

By combining the validated learner and instructor models, a hybrid model can be developed. This model can provide a comprehensive evaluation of smart-government initiatives, taking into consideration the requirements and perspectives of both learners and instructors. The hybrid model can assist in identifying areas for enhancement and directing the future development and implementation of smart-government initiatives in the UAE. To answer the first question, the researchers conducted a comprehensive literature review and identified 12 factors from the learner's point of view and 11 factors from the instructor's point of view that affect the adoption and use of smart-government initiatives in public sector organisations in UAE.

To answer the second concern, the researchers developed two proposed Multi-Factors Models based on the IS model of DeLone and McLean (2003), one for the learner's point of view and one for the instructor's point of view. The models were validated using SEM (Structural Equation Modelling) on data collected from learners and instructors at one public sector organisation, and tested using data collected from eight public sector organisations.

To address the third concern, the researchers developed a hybrid model for evaluating smart-government initiatives based on the validated learner model and the validated instructor model. The hybrid model was developed by combining the predictors from both models and using perceived benefits as the outcome variable. The hybrid model was validated using SEM on collected data from eight public sector organisations.

Conclusion and Recommendation

The United Arab Emirates (UAE) has made significant progress in implementing smart-government initiatives within the public sector.

However, evaluating the success of such initiatives is essential for their ongoing development and long-term viability. This research study intended to contribute to the body of knowledge (theory) in the disciplines of information systems and smart-government initiatives by proposing and validating models for evaluating the adoption and its effects of smart-government initiatives in the United Arab Emirates. The research focused on the points of view of learners and instructors, supporting the validity of the proposed models.

The study utilised a baseline model (McLean & DeLone, 2003) as a framework for assessing the adoption and impact of smart-government initiatives in the UAE. However, it expanded upon the foundational model by adding Trust, Environmental factors, and Public sector organisation readiness. These concepts are essential because they aid in evaluating the public sector organization's preparedness to implement and sustain smart-government initiatives.

The research discovered that Trust, Environmental factors, and Public sector organisation preparedness are rarely incorporated into the base model. The study's findings demonstrated the usefulness of these constructs, as evidenced by this research. This suggests that in UAE public sector organisations, organisational settings (readiness of the public sector organisation), environmental demand/pressure, and subjective culture (trust) have the greatest impact on learners.

The study also discovered that the impact of Service Quality on Technical System Quality (SQ TSQ) was significant in both the learner and instructor models. This finding provides empirical evidence regarding the relationship between two exogenous factors, Service Quality and Technical System Quality, that existed previously. This relationship is crucial, particularly for smart-government initiatives, as the majority of studies in this field do not provide the relationship between the exogenous factors, namely Service Quality, System/Technical Quality, and Course Quality.

In addition, the study subdivided System Quality into two subcategories, Educational System Quality and Technical System Quality, in order to test them individually as opposed to generally. In addition, Intention/Use was divided into Intention to Use and Actual E-Learning Use. These enhancements to the foundational model served to provide a more thorough and precise evaluation of smart-government initiatives.

This research study made significant contributions to knowledge (theory) in the disciplines of information systems and smart-government initiatives. The proposed and validated models for successfully evaluating adoption and its impacts of smart-government initiatives in the UAE are comprehensive, as they take into account all four themes of smart-government initiatives, namely technology, information, user characteristics, and context. In addition, the models were validated from various points of view of learners, instructors, and learners, which increases their validity. In addition, the study expanded the foundational model by incorporating key concepts such as Trust, Environmental factors, and Public sector organisation readiness. In conclusion, the study's findings revealed a significant impact of Service Quality on Technical System Quality, which provide empirical evidence of the relationship between these two exogenous factors. Overall, this research study provides a hybrid model for evaluating smart-government initiatives, which is founded on the validated learner model and validated instructor model.

The research study has significant practical implications for public sector organisations implementing wise government initiatives. The study provides three instruments that can be used to evaluate the success of these initiatives from the perspectives of various users, including learners, instructors, and a combined view. This enables an exhaustive comprehension of the impact of these initiatives on various stakeholders.
In addition, the study highlights the critical role of Trust, Environmental factors, and Public sector organisation preparedness in the successful implementation of smart-government initiatives. Specifically, the study emphasises the significance of factors such as ICT policy, competitive pressure from peer public sector organisations, top management support, financial support, internet accessibility, and utility power in the successful evaluation of these initiatives. These factors must be taken into account when implementing smart-government initiatives, as they can substantially impact the initiatives' success.

The study emphasises the importance of service quality in the technical system quality of smart-government initiatives, an aspect that is often overlooked in related studies. The findings provide empirical evidence of the relationship

between service quality and technical system quality, highlighting the need for educational institutions and public sector organisations to understand the importance of providing high-quality services to support the successful implementation of smart-government initiatives (Rachmawati et al., 2019).

The insights and instruments provided by this research study can be useful for public sector organisations and educational institutions in implementing and evaluating smart-government initiatives effectively. By considering the factors highlighted in this study, organisations can ensure that the initiatives they implement meet the needs of stakeholders and are effective in achieving their objectives (Tham et al., 2017; Udriyah et al., 2019).

Furthermore, the study also emphasises the importance of understanding user satisfaction and return on investment as additional metrics for measuring the success of smart-government initiatives. These metrics can help organisations measure the effectiveness of their initiatives and make necessary adjustments to improve their impact.

Overall, this study provides critical insights into the factors that influence the success of smart-government initiatives and highlights the importance of considering service quality, user satisfaction, and return on investment as essential metrics in measuring the success of such initiatives. By taking these factors into account, organisations can ensure that their initiatives meet the needs of stakeholders and contribute to the broader goal of building smart and efficient government systems.The research study provides several suggestions for organisations within the public sector that have implemented smart-government initiatives. The study emphasises the significance of contemplating multiple factors when evaluating smart-government initiatives successfully. It suggests that public sector organisations should evaluate the effectiveness of initiatives using models that incorporate multiple factors, such as those developed in the study. These models take into consideration the requirements and points of view of various stakeholders who use the e-Learning system, as well as all the components required to make e-Learning sustainable.

In addition, the study suggests that public sector organisations give attention to Trust, Public sector organisation preparedness, and Environmental factors, which are typically neglected by the majority of models and frameworks. These factors have been determined to be crucial for the successful adoption and evaluation of smart-government initiatives, and they can significantly enhance service delivery.

The research study recommends involving a wider range of stakeholders in future research to establish a robust platform for the adoption and evaluation of smart-government initiatives. This will enable organisations to ensure that their initiatives meet the needs of stakeholders and are effective in achieving their objectives. The study also suggests testing the developed models in different countries and diverse domains to increase their applicability.

The study proposes using qualitative or a combination of qualitative and quantitative approaches in future research to understand the changes in technology and context. It also recommends the inclusion of necessary constructs to enhance the understanding of smart-government initiatives. Investigating moderating variables such as age, gender, and experience in relation to smart-government initiatives can also provide further insights into the adoption and effectiveness of such initiatives.

Furthermore, the study recommends exploring the integration of games into course components to improve learner engagement and learning outcomes. The study also recommends incorporating course components such as contents, design, and delivery, which have been neglected in the evaluation of smart-government initiatives in public sector organisations in the United Arab Emirates (UAE). In summary, the research study provides useful recommendations for public sector organisations on how to successfully adopt and evaluate smart-government initiatives. It also highlights areas for future research that can enhance our understanding of such initiatives and increase their effectiveness.

References

1. Adkins, S. (2021). The Africa Market for Self-paced elearning products and Services:2021-2016 Forecast and Analysis.
2. Ahmed, T. (2021). Toward Successful E-learning Implementation in Developing Countries:A proposed Model for Predicting and Enhancing Higher Educations' Participation. International Journal of

Academic Research in Business and Social Sciences, 3(1), 422-425.
3. Al-Aulamie, A., Mansour, A. and Daly, H. (2021). Investigating the direct effect of intrinsic motivation on learners' behavioural intention. In Proceedings of International Conference Information Systems 2021 (pp. 353-357). Lisbon, Portugal: IADIS.
4. Al-Sabawy, A. Y. (2021). Measuring Smart-government initiatives Success. Public Sector Organization Of Southern Queensland.
5. Azam, S. M. F., Yajid, M. S., Tham, J., Hamid, J. A., Khatibi, A., Johar, M. G. M. & Ariffin, I. A. (2021). *Research Methodology: Building Research Skills*. 1st Ed., McGraw-Hill Education (Malaysia) Sdn. Bhd.
6. Bhalalusesa, R., Lukwaro, E.E. & Clemence, M. (2021). Challenges of Using E-learning Management Systems Faced by the Academic Staff in Distance Based Institutions from Developing Countries: A Case Study of the Open Public sector organization of The United Arab Emirates (UAE). Huria Journal of OUT, 14, 89-110.
7. Byrne, B. M. (2016). Structural equation modeling with AMOS: Basic concepts, applications, and programming (3rd ed.). Routledge.
8. Delone.W,McClean,E.R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. Journal of Management Information Systems, 19(4), 9-30.
9. DeLone.W,McLean,E. (1992). Information System Success:The Quest for Dependable variable. Information Systems Research, 3(1), 60-95.
10. deMaagd, Tarkleson, Sinclair, Yook, & Egidio. (2021). An Analysis of e-Learning Impacts & Best Practices in Developing Countries. .
11. Dewi, N, Azam, S. M. F. and Yusoff, S. K. M. (2019). Factors influencing the information quality of local government financial statement and financial accountability, Management Science Letters, 9 (9): 1373-1384
12. Ehlers, U. (2019). Web 2.0 – e-learning 2.0 – quality 2.0? Quality for new learning cultures. Quality Assurance in Education, Vol. 17 No. 3, 296-314.
13. Filippidi, A., Tselios, N. & Komis, V. (2020). Impact of Moodle usage practices on learners' performance in the context of a blended learning environment. . In Social Applications for Lifelong Learning. , (pp. 1-6). Patra,Greece.
14. Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39-50.
15. Govindasamy, T. (2001). Successful implementation of e-learning: Pedagogical considerations. The Internet and Higher Education, 4, 287-299.
16. Hashim, O. W., Khatibi, A. & Azam, S. M. F. (2023). The Influence of Social Network Ties towards Social Entrepreneurial Intention of Undergraduate Students: The Case of Sri Lanka. Russian Law Journal, 11 (6s): 100 – 113
17. Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling, 6(1), 1-55.
18. Jo, I.-H., Kim, D. & Yoon, M. (2021). Analyzing the log patterns of adult learners in LMS using learning analytics. In Proceedins of the Fourth International Conference on Learning Analytics And Knowledge (pp. 183–187.). LAK '14. New York, New York, USA: ACM Press.
19. Kline, R. B. (2016). Principles and practice of structural equation modeling (4th ed.). Guilford Press.
20. Laurillard, D. (2006). E-Learning in Higher Education. In P. Ashwin (Ed.). From Changing Higher Education: The Development of Learning and Teaching., 71-84.
21. Lyytinen, K., & Hirschheim, R. (1987). Information systems failures - A survey and classification of the empirical literature. Oxford Surveys in Information, 4, 257-309.
22. Manju, T., Kumar Tarofder, A., & Azam, S. M. F. (2023). Modern Validity of Historical Factors on Voter Intention and Its Basic Patterns in Sri Lanka. International Journal of Social Science Research and Review, 6(4), 104-122.
23. Marjanovic, U., Delić, M. & Lalic, B. (2016). Developing a model to assess the success of smart-government initiatives: evidence from a manufacturing company in transitional economy. Information Systems and e-Business Management, 14(2), 253–272. doi:10.1007/s10257-015-0282-7
24. Mason, R. (1978). Measuring information output: A communication systems approach. Information and Management, 1, 219-234.
25. Mohammadi, H. (2015). Investigating users' perspectives on e-learning: An integration of TAM and IS success model. Computers in Human Behavior, 45, 359–374.

26. Moore JL, Dickson-Deane C and Galyen K. (2021). ELearning, online learning, and distance learning environments: Are they the same? . The Internet and Higher Education, 14(2), 129-135.
27. Mtebe, J. (2015). Learning Management System success: Increasing Learning Management System usage in higher education in sub-Saharan Africa. International Journal of Education and Development using Information and Communication Technology (IJEDICT), 11(2), 51-64.
28. Mtebe, J. S., & Raisamo, R. (2021). Challenges and instructors' intention to adopt and use open educational resources in higher education in The United Arab Emirates (UAE). International Review of Research in Open and Distance Learning, 15(1), 250-271.
29. Naveh, G., Tubin, D. & Pliskin, N. (2020). Learner satisfaction with learning management systems: a lens of critical success factors. Technology, Pedagogy and Education, 21(3), 337–350.
30. Neuman, W. (2007). Basic of social research qualitative and quantitative approaches (2nd ed.). Boston: Pearson.
31. Oppenheim, A. (1992). Questionnaire design, interviewing and attitude measurement (2ed ed.). London: Pinter Pub Ltd. .
32. Pambreni, Y., Khatibi, A., Azam, S. M. F. and Tham, J. (2019). The Influence of Total Quality Management toward Organization Performance, Management Science Letters, 9 (9): 1397-1406
33. Pushpakumara, W. D. H., Atan, H., Khatibi, A., Azam, S. M. F. and Tham, J. (2019). Developing a Framework for Scrutinizing Strategic Green Orientation and Organizational Performance with Relevance to the Sustainability of Tourism Industry, European Journal of Social Sciences Studies, 4 (3): 1-18
34. Qing, T., Khatibi, A., Tham, J. And Azam, S. M. F. (2023). Attractiveness of Vocational Collegesin Shanxi: Myth and Development in China. Russian Law Journal, 11 (6s): 81 – 90
35. Rachmawati, D., Shukri, S., Azam, S. M. F. and Khatibi, A. (2019).Factors Influencing Customers'Purchase Decision of Residential Property in Selangor, Malaysia, Management Science Letters, 9 (9): 1341-1348
36. Riahi, G. (2015). Smart-government initiatives based on cloud computing:A Review. The 2015 International Conference on Soft Computing and Software Engineering, (pp. 352-359).
37. Shannon, C. (1948). A mathematical theory of communication. The Bell System Technical Journal, 27, 379-423.
38. Shannon, C.E & Weaver, W. (1949). The Mathematical Theory of Communication. Champaign, IL: Public sector organization of Illinois Press.
39. Sharma, R., & Mishra, S. . (2007). Global E-learning practices: An introduction. In R. M. Sharma, Global Cases in E-learning Practices: Successes and Pitfalls (pp. 1-11). . Hearsey: IDEA Group Publishing.
40. Shee, D.Y. & Wang, Y.-S. (2018). Multi-criteria evaluation of the web-based e-learning system: A methodology based on learner satisfaction and its applications. Computers & Education, 50, 894-905.
41. Stangor, C. (2021). Research methods for the behavioural sciences (4th ed.). USA: Wadsworth Pub Co. .
42. Tella, A. (2022). System-related factors that predict learners' satisfaction with the Blackboard Learning System at the Public sector organization of Botswana. African Journal of Library, Archives and Information Science, 22(1), 41.
43. Tham, J., Yazid, M. S. A, Khatibi, A. A. and Azam, S. M. F. (2017), "Internet and Data Security –Understanding Customer Perception on Trusting Virtual Banking Security in Malaysia", European Journal of Social Sciences Studies, 2 (7): 186-207
44. Tossy, T. (2017). Measuring the impacts of e-learning on learners' achievement in learning process: An Experience from The United Arab Emirates (UAE) public sector organizations. The Online Journal of Distance Education and e-Learning, 5(2), 61-68.
45. Udriyah, U., Tham, J. and Azam, S. M. F. (2019). The Effects of Market Orientation and Innovation on Competitive Advantage and Business Performance of Textile SMEs, Management Science Letters, 9 (9): 1419-1428
46. Urbach, N. & Müller, B. (2022). The Updated DeLone and McLean Model of Information Systems Success. . In M. R. Y. K. Dwivedi, Information Systems Theory. Integrated Series in Information Systems (pp. 1-18). New York, NY: Springer New Yor.
47. Wang, Y.-S. (2003). Assessment of learner satisfaction with asynchronous electronic learning systems. Information & Management, 41(1), 75-86.