

# **The Strategy of e-learning Crisis Management and Effectiveness of Intelligent e-education During Covid-19 for a Sustainable Education System**

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## **Abstract**

The study explores the nature of the relationship between the strategy of managing the learning crisis and the effectiveness of e-learning in light of the COVID-19 epidemic to continue the educational process and keep abreast of technological developments at the University of Kufa. Using a questionnaire survey of a sample consisting of (265) teachers from various colleges of the University of Kufa, we explore the effect of the strategy of e. learning crisis management on the effectiveness of LMS. Accordingly, (265) questionnaires were distributed, there are (14) questionnaires that were not received, (4) questionnaires incomplete answers, and therefore (247) questionnaires were approved for statistical analysis. The results show that the learning crisis management strategy has a significant and positive impact on the effectiveness of e-learning, given the importance of the learning crisis management strategy in developing the effectiveness of e-learning considering the COVID-19 epidemic. To continue and expand the educational process and increase the scientific sobriety in universities would raise higher education in Iraq. We suggest for future studies the use of different methodologies to test society's behavioral and cultural dimensions on the ability of organizations to digital transformation in times of crisis.

## **Keywords**

Strategy of e-learning, e-learning Crisis Management, Smart e-education, LMS, Covid-19.

## **Introduction**

In today's world, technology has a significant impact on how people live their lives, particularly during the current epidemic crisis, as the entire world sails through the storm. Technological advancement and the Internet have significantly altered people's lives, just as they have altered numerous fields now. Due to scientific progress, information and communication technology has emerged as a critical and decisive factor in causing and resolving the university learning crisis and thus in ensuring the success of the university education process. All of this resulted in a series of unexpected adverse shocks for educational institutions. This demonstrates the critical nature of a learning crisis management strategy, as it is something that all institutions require. What distinguishes developed societies from developing societies is sound management, efficiency, and the ability to maximize human and material resources to accomplish goals. The COVID 19 pandemic has completely disrupted education systems worldwide, with students unable to attend universities. As a result, the e-learning system offers a diverse range of educational opportunities, particularly at the higher academic levels. However, this is a rare occurrence in developing countries, where students prefer traditional education. Technology is progressing, but it is not yet perfect. As with any innovation, the e-learning system encountered numerous roadblocks. Thus, studying the educational crisis management strategy in universities is one of the critical strategies contributing to security concerns, crisis management, internal environment improvement, and achieving quality between Arab and international universities. As a result, leaders must research the internal and external factors contributing to crises and develop organizational strategies to avoid problems that undermine education's effectiveness.

As a developing country, Iraq continues to lag behind many other countries in the field of information and communication technology. Still, it has begun to develop the necessary strategic plans to deal with crises and keep up with global changes brought about by the COVID 19 epidemic. However, that process requires a well-defined strategic plan and an integrated approach to crisis management. Education is one of the most potent forces affecting overall development. Iraq has come a long way in incorporating computers into the classroom or managing the educational process. To increase educational institutions' effectiveness and create an information environment that meets the needs of the educational process's components. Valverde-Berrocso, Garrido-Arroyo, Burgos-Videla, and Morales-Cevallos (2020) indicate that because e-learning is a global educational phenomenon of interest to academic researchers in education systems. Particularly in light of the worldwide spread of the COVID-19 epidemic, it will be critical for universities to prepare to manage the crisis at the moment. Priority should be given to crisis management

in various educational, social, economic, and cultural contexts via e-learning (Shih, Feng, & Tsai, 2008). Considering the global COVID-19 epidemic, many universities now use education management systems. Most of them have turned to e-learning as the best option for ensuring the educational process's continuity. It is certain that the crisis confronting educational institutions because of the COVID-19 outbreak has pushed e-learning forward and elevated it to a viable alternative. Without specialized staff to manage the e-learning process, teachers will face significant difficulties adjusting to this abrupt change. The purpose of this study is to examine the role of crisis management in enhancing the effectiveness of electronic education in educational institutions.

### **The Strategy of E. Learning Crisis Management**

Nowadays, managing a learning crisis is a critical component of strategic management before pursuing any long-term goals, and crisis management are necessary to ensure the educational institution's stability and continued success. The organization's practical survival is frequently viewed as a strategic objective of the beneficiaries in pursuit of establishing short- and long-term interests (Albers & Rundshagen, 2020). From this vantage point, the methods considered by the institution to deal with disasters and ensure their survival can be included as part of the strategy and now by combining the outcomes of crisis management with the accomplishments of strategic management (Al Eid & Arnout, 2020). Officials attempt to avert dangerous and unpredictable waves, as crisis management is a science. In general, it is a process for preventing crises or mitigating their effects during their occurrence and concluding the procedure in the field of strategic management. Therefore, it is critical to plan for the worst-case scenario and then find ways to manage and resolve it. Additionally, educational institutions experiencing a learning crisis require additional preparation (Rapanta, Botturi, Goodyear, Guàrdia, & Koole, 2020).

According to Wang and Hutchins (2010), university education faces a variety of crises. Internal crises are those that occur because of administrative incompetence within the university (the internal environment). Such situations may include the following:

- **External crises-**: crises involving the external environment, for example, competition from other universities (the external environment).
- **Administrative crises-**: management misbehavior at the university.
- **Psychological crises-**: a sense of depression, boredom, and frustration among university employees.
- **Financial and economic crises-**: the crises that result in the institution's collapse, maintenance, and continuation.

- **Security crises-**, such as attacks on university employees.
- **Natural disasters** such as volcanic eruptions, albumin, torrential rains, and floods.
- **Crises:** occur unexpectedly and abruptly, such as car accidents and diseases.
- **Public health emergencies**, such as an epidemic (COVID-19 pandemic).

Pearlin and Bierman (2013) indicate that Almost all institutions can experience all these strains under various circumstances. According to Moerschell and Novak (2020), the crisis management consultant Jonathan Bernstein, post-crisis analysis is "a critical activity for any crisis management team." According to Murphy (2021), the purpose of the post-crisis period is to assess the crisis's legacy, monitor current developments because of the problem, and plan for a sustainable recovery. Additionally, scientists and researchers recognize that the period immediately following a crisis presents an opportunity for organizational change (Ulmer, Seeger, & Sellnow, 2007). It is time to assess the leadership team's, communication team's, and those not assigned to the role's behaviors to determine the potential for actual organizational change. After crises, successful leaders identify new opportunities, such as innovation, creativity, and new business models (Snowden & Boone, 2007).

### **The Learning Crisis Management Strategy's Dimensions**

These dimensions are as follows:

#### **1) Proactive Approach**

A proactive strategy is a valuable and much-needed asset in educational institutions (Lourenço, Andrade, & Byram, 2020), as proactive employees are associated with various positive outcomes. It includes Performance (Jang, Jo, & Kim, 2020), career success (Omondi, 2020), tolerance, diligence, and competence (Redmond, 2013), participation in employee organizing initiatives (Campbell, 2000), and improved adaptability (Thompson, 2005). Universities' proactive strategies will prepare employees to deal with a crisis and the continuation of the educational process, and the drive to succeed and perform well within the university calendar. The ability to develop the effectiveness of e-learning is necessary for academic success (Holsapple & Lee-Post, 2006). Barteit et al. (2020) describe e-learning as a suitable alternative to traditional education for establishing goals, implementing a learning crisis management strategy, and evaluating educational outcomes during a learning crisis. Individuals who use an e-learning system exhibit characteristic of initiative and responsibility that are very similar to those of the proactive individual.

## **2) Crisis Response Strategy**

Coombs (2007) defines the crisis response strategy as "what the educational institution does and does after the crisis occurs." The response strategy aspires to be responsive, which is defined as the capacity to respond or respond positively and rapidly. As a result, the institution employing this strategy must first and foremost determine the source of the crisis and then work to mitigate its impact on stakeholders. In this regard, it is critical to repair and maintain the organization's reputation. The primary objective of the response strategy is to reclaim as much control of the situation as possible and thus to take the pioneering initiative, which includes swiftly implementing measures to mitigate the crisis's events while restoring the institution's activity (Mills & Keremah, 2020). The response strategy is influenced by the nature and history of the problem, and understanding the complexity of the crisis is critical because it has a significant impact on the nature and focus of the crisis response strategy in general in organizations (Bundy, Pfarrer, Short, & Coombs, 2017).

## **3) Interactive Crisis Management Strategy**

The interactive crisis management strategy aims to avert the continuation of the crisis (Boin & McConnell, 2007). This strategy seeks to provide relief to the institution following the occurrence of the crisis. In some cases, this mitigation is intended to minimize or eliminate the costs of losses caused by the crisis. According to Johnson et al. (2016), Interactivity refers to making the right decision. That good education and administrative leadership in universities can only be achieved if universities pay attention to the three steps by clearly communicating information. First, successfully implement core operations with the assistance of empowered employees who have access to data, resources, and information and who exercise intelligence and knowledge promptly.

Additionally, unlike other organizations in the community, the campus provides a unique setting for crisis management. As a small city, the university is a network of support systems that create an inclusive structure for all. Universities are supported by an emergency management work guide for higher education institutions. As a result, universities are intricate in their system, human activity, operating hours, and services (Nweke, Teh, Al-Garadi, & Alo, 2018). Harmonization of the numerous instructions, communication channels, structures, and personnel on campus can be challenging, but the communication protocols implemented throughout the site and campus processes can assist all administrators in remaining in direct contact with the mission. A genuine individual unfamiliar with and unaware of the protocols that apply during crises can publish the

information intended to mitigate the risk of a crisis and increase the university's effectiveness, or this action may have a negative effect (Moerschell & Novak, 2020).

### **Smart Education Effectiveness during Covid-19 Pandemic**

The effectiveness of e-learning is one of the most significant explosions that accelerated the Internet's transformation. It enables users to collect knowledge and education in a productive manner via a synchronized and asynchronous methodology to meet challenges and acquire modern knowledge within production environments rapidly. E-learning delivers content Using electronic information and communication technologies. The effectiveness of e-learning is one of the most significant explosions that accelerated the Internet's transformation. It enables users to collect knowledge and education productively via a synchronized and asynchronous methodology to rapidly meet the challenges and requirements to acquire modern knowledge within production environments. the e-learning provides content via electronic informatics (Aparicio, Bacao, & Oliveira, 2016). When assessing the effectiveness of higher education, it is critical to consider the multifaceted nature of educational production (Gikandi, Morrow, & Davis, 2011). It necessitates qualified faculty, qualified personnel, and an evaluation system, as the efficiency of higher education systems is not solely dependent on teachers. It is determined in various ways by regulation, institutional settings; geographic location; financing structure; and other internal and external factors (Schimmelfennig, 2021).

According to R uth and Kaspar (2017), the following objective and subjective criteria are established for the effectiveness of e-learning:

1. It provides computer hardware and accessories, electronic display devices, Internet communication networks, satellite television, electronic libraries, physical room functions, and appropriate furniture.
2. It provides educational programs that enable the management of education, the management of electronic content, and the control and monitoring of systems.
3. Faculty and students at universities are trained in all aspects of processing and communication technology and all educational programs.
4. They are providing and training professional cadres in the operation and maintenance of all information technology equipment.
5. Developing deliberate plans for e-learning implementation based on the experience of Arab and international countries and prestigious universities.

Kear et al. (2016) argue that the effectiveness of e-learning influences academic strategy, as evidenced by the following:

- The institution establishes the institutional strategic plan for the role of e-learning in the institution's overall development and the context for developing strategies for academic departments and administrative and operational departments.
- The institution specifies a strategy for incorporating e-learning into teaching, including a mix of e-learning and more traditional teaching and learning mechanisms.
- The institution's policy on using external environments and resources, such as public social media and open educational resources, shall be in place.
- Faculty members and departments must plan to offer e-learning or blended learning options that are most closely aligned with students' requirements in their market sector.
- The institutional strategic plan must be compatible with the academic departments' goals.

E-learning effectiveness usually depends on motivation and commitment to interaction, making it more challenging to measure and ensure the quality of e-learning effectiveness. But recent studies determine the dimensions. And guidelines; Best practices and standards for the effectiveness of e-learning in different environments (Mwanza & Engeström, 2005). Based on the above, these dimensions can be clarified as follows:

## **1. Performance**

Abu-Glawa (2014) defines performance as all educational practices to achieve desired goals and includes all academic activities and procedures. Performance is the work that needs to be done measurably, and competence is directly related to performance and affects the learning process in institutions (Klein-Collins, 2012). Performance is measured through perceptions of using e-learning systems for benefits, such as saving time; Money; And effort; Facilitate the process of communicating with others; And improving the quality of education by providing users with an equal basis in the tasks they perform (Heydarian et al., 2015). The concept of competency is closely related to educational performance in terms of outputs and inputs, and it contributes to developing the effectiveness of accelerated e-learning in the world (Shavelson, 2010). There is an integral and interdependent relationship between the concept of efficiency and performance. In addition to that, competence is related to performing at a certain level of performance. Caldwell et al. (2012) indicate that "excellence" or "performance" is the same thing in an organization as it corresponds to the leadership perspective. Therefore, performance measurement is

appropriate for achieving the effectiveness of e-learning in higher education institutions. Through it, the effectiveness of teaching for students can be guaranteed, and at the same time, positive performance can be measured and motivated, and problems that afflict the educational institution (Kusurkar, Ten Cate, Vos, Westers, & Croiset, 2013).

## **2. Satisfaction**

User satisfaction is the extent to which the e-learning system meets its information requirements (Kurt, 2019; Shee & Wang, 2008). Academic satisfaction with e-learning systems may be measured in several studies (Cheok & Wong, 2015) because satisfaction leads to various essential outcomes of interest to educational leadership, administrators, and academics (Aydin, Sarier, & Uysal, 2013). Academic satisfaction should also be one of the primary measures of education outcomes. It enhances the quality and influences effective teaching and high-performance expectations on academic and student satisfaction. Academics hold positive beliefs towards e-learning as it supports and strengthens the education system. Understanding learners' attitudes can support the expansion of the e-learning system activities and meet their needs (Chen, Hwang, & Wang, 2012). When teachers and learners can see the benefits and satisfaction when using e-learning systems, they are more likely to maintain or enhance their use of those systems. Academic satisfaction may affect the continued adoption of the e-learning system in the future through the vital relationship between individual satisfaction and the use of technologies in previous experimental studies (Cheok & Wong, 2015). Thus, satisfaction increases with the more frequent use of e-learning systems. Based on the preceding, satisfaction has been recognized as a vital factor in influencing academics to frequently use e-learning systems (Al-Fraihat, Joy, & Sinclair, 2020).

Among the various aspects associated with academic satisfaction, the importance of the emotional component of the students themselves is emphasized (Agudo-Peregrina, Iglesias-Pradas, Conde-González, & Hernández-García, 2014). Thus, emotional intelligence is among the primary and most relevant factors, as it expects greater satisfaction in the academic field (Bar-On, 2005). Worldwide, monitoring student satisfaction and the quality of service provided has been directed towards improving the quality of academic life (Grebennikov & Shah, 2013). In addition, the increasing interest in quality control in the educational field is identified through the development of a new management model. This model is based on educational actions that seek to achieve predetermined goals (Eppich, Hunt, Duval-Arnould, Siddall, & Cheng, 2015). It includes internal audits to evaluate the extent of achievement that has been achieved, and the objectives set at the outset lead to raising the level of decision-making to the highest level. Furthermore,

strategic sustainability skills and support for quality education are included sustainably, ensuring that future generations will reap many benefits (Gómez et al., 2020).

### **3. Support**

Universities began reviewing their strategies in 1998-99 in using information and communication technology to enhance student earnings on campus. Consequently, the review would lead to establishing an educational technology center to support faculty members in research and innovation development. The center works effectively as a single source to support faculty planning and development of e-learning effectiveness to enhance student education (Curran, 2004). Support is assistance in implementing the e-learning program (launching; marketing; promotion; technology platforms; infrastructure; feedback; management reports; technical and implementation support) as well as assistance in designing and building services (building content specific to specific education; transferring existing materials to coordination Online; design and customization of the e-learning platform (Nawaz & Qureshi, 2010). Therefore, the lack of technical support or knowledge from universities and computer centers may exacerbate problems among academics and students. Therefore, technological support has a significant impact on academics and students to use technology to enhance the use of the e-learning system.

Consequently, it supports the possibility of integrating ICTs into the educational system (Moses et al., 2008). Institutional support includes the most significant number of items in e-learning because this dimension covers multiple sub-areas. Institutional support refers to the activities and policy measures undertaken by institutions in e-learning. In contrast, student support refers to the set of actions and policies for student services. Support for faculty members refers to the set of activities and policies that help faculty and staff perform their jobs (Jung, 2011).

### **4. Technologies**

According to Schwartzberg (2006), technology is the technologies, machines, and systems; And use; And knowledge; Methods of organizing to solve a problem; And the Performance of a specific function, as technology refers to all the methods, tools, mechanisms and procedures that would enhance university education.

Therefore, technology is one of the e-learning services. It is one of the tools used to improve university education, as Oakley (2000) defines technologies in e-learning as tools for the educational process through which communication between learners and teachers. The access to educational materials, via the Internet or computer networks Other. Therefore,

technologies in e-learning are the basis for the provision of learning skills and knowledge using a comprehensive approach that may not be limited to a specific course, technology, or infrastructure. In addition, it provides flexibility that allows training at the right time when needed (Patil, 2014).

## **5. Facing Challenges**

Soderstrom (2017) refers to the definition of facing challenges as factors that need to be well addressed to ensure the adoption of information and communication technology in the implementation of projects. Facing challenges also passes through other terms, such as obstacles and barriers. In addition, it means facing challenges are the factors that may impede or lead to difficulties in the process of implementing the effectiveness of e-learning or information and communication technology in universities such as Electronic technology, information and communication in universities (Shari & Khalif, 2010; Bass & Heels, 2011; Bhusri et al., 2012)—in addition, facing the typical challenges that students may encounter in group activities. Therefore, we find that the e-learning environment presents additional challenges for the isolated learner, especially in participation, access, and support. There are also strategies for teachers in the e-learning environment that focus on supporting learners by developing and facilitating cooperative learning activities for group presentations. It also focuses on the number of years of teaching experience. Ideas are presented to encourage those with inexperience in facilitating the e-learning environment as a starting point to understand and support learners (Swan, 2017).

## **ELCM Strategy and E. Education Effectiveness**

Crises and disasters damage the infrastructure of higher education institutions, and here these losses must be replaced by an advanced educational infrastructure to revive the system of higher education institutions. By supporting the affected areas, the international community can also help take advantage of the opportunity to rebuild their educational system and modernize teaching methods in higher education. Here, the importance of information and communication technology between students and teachers in higher education institutions' programs appears. It serves as a source of information for academics, administrators, and decision-makers involved in planning, designing, and implementing the effectiveness of e-learning when managing a learning crisis in higher education institutions (Rhema & Milieus, 2012). University professors were forced to start a research project implementing the e-learning system due to the COVID-19 epidemic. They also analyzed the level of use of the e-learning platform in the university education system. So, the university must recruit and select at least two I.T. professionals whose sole mission is to

manage the collaborative platform, virtual library, and virtual classrooms. In addition, there should be training and support provided by these professionals for each teacher for creating virtual classes, designing e-content and electronic tests. Traditional education is likely to face significant changes due to the COVID-19 pandemic crisis.

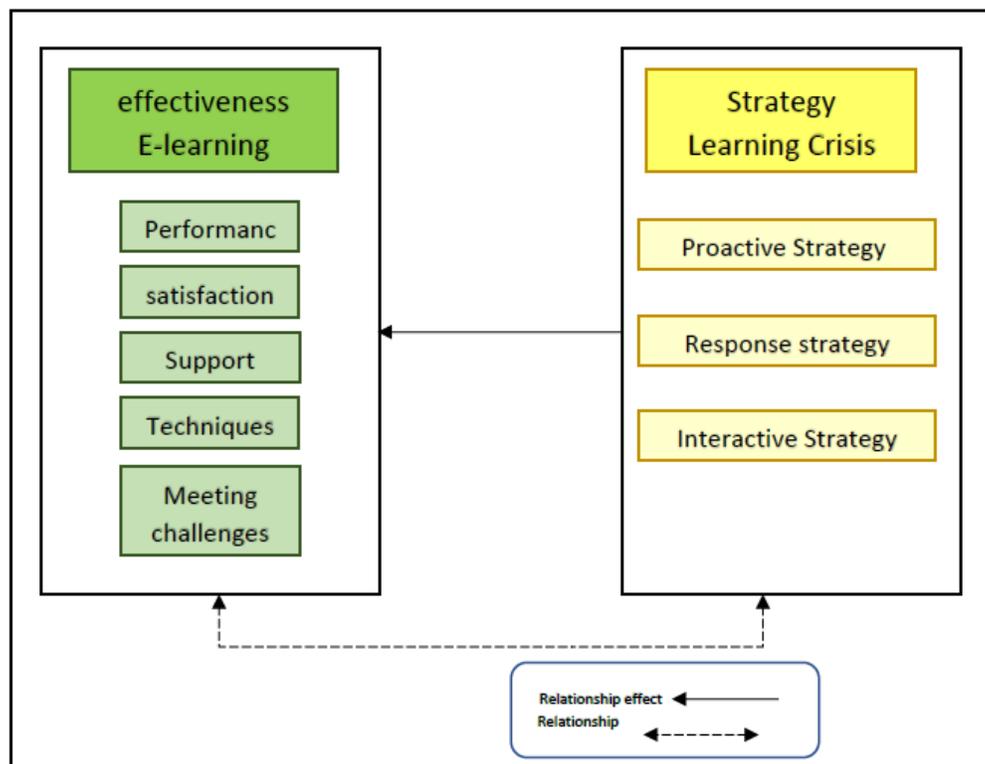
Information and communication technology will certainly affect education. Future curricula will need to contain e-learning tools, classrooms will be increasingly virtual, and online testing will become commonplace (Edelhauser & Dima, 2020). However, despite the technological development, teachers are accustomed to the traditional teaching methods in the form of face-to-face lectures and thus are reluctant to accept any change. But during the COVID-19 pandemic crisis, there is no other alternative but to be satisfied with the dynamic situation and get the change that will benefit the education sector and bring many unique innovations. So, the main lesson for others may be to adopt e-learning technology before the crisis strikes (Todorova & Andersen, 2011). Finally, it can be said that disasters and epidemics such as the Covid-19 epidemic create a lot of chaos and tensions, so there is a vital need to study technology in-depth, and it is imperative to take care to balance fears and anxieties amid crises (Dhawan, 2020). Based on the preceding, a close correlation appears between the strategy for managing the learning crisis and the effectiveness of e-learning. Accordingly, there is a positive relationship between working the learning crisis and the effectiveness of e-learning.

### **Model and Hypothesis**

The study's main objective is to explore the nature of the relationship between the learning crisis management strategy variable and the e-learning effectiveness variable considering the COVID-19 epidemic for the continuation of the educational process at the University of Kufa. Therefore, the main goal of the study is divided into a group of sub-goals, as follows:

1. According to a sample of the teaching staff, identifying the learning crisis management strategy in the faculties of the University of Kufa.
2. According to a sample from the faculty, analyzing the nature of the relationship between the strategy of managing the learning crisis and developing the effectiveness of e-learning in the faculties of the University of Kufa.
3. According to a sample of the faculty, exploring the impact of the learning crisis management strategy on developing the effectiveness of e-learning in the faculties of the University of Kufa.

The hypothetical outline of the study is the core of the intellectual structure of a set of facts that put forth a simple, concise, and theoretical concept of the phenomena being sought. The independent variable (learning crisis management strategy) can be measured through three dimensions (proactive approach, response strategy, reactive strategy) that he came up with. (Mills & Kromah, 2020). The dependent variable (e-learning effectiveness) can also be measured through five dimensions (Performance; satisfaction; support; technologies; facing challenges) that were presented by each of (Alcheringa, 2014; Sayyed, 2015; El-Bakry & Mastorakis, 2015; Sony., 2020).



**Figure 1 The theoretical model**

Accordingly, the main hypothesis of the study states the following:

*There is a significant effect of the dimensions of the learning crisis management strategy on the effectiveness of e-learning.*

We used the statistical table for the study population (859) teachers (Johnson & Christensen, 2008). Accordingly, the optimal sample size is (265) teachers. (265) questionnaires were distributed, there are (14) questionnaires that were not received, (4) questionnaires incomplete answers, and therefore (247) questionnaires were approved for bio-analysis.

The response rate is (93%) and is considered statistically acceptable, as shown in Table (2) below.

**Table 1 The survey response rate**

The situation	Number	100%
Number of resolutions distributed	265	100%
Number of resolutions recovered	247	93%
Number of unresets recalled resolutions	14	5%
The number of resolutions is incomplete.	4	2%

## **Tests and Results**

The influence relationships were tested between the independent and the learning crisis management strategies, consisting of three dimensions: (proactive strategy, response strategy, reactive strategy). The adopted variable is the effectiveness of e-learning, which includes five dimensions (Performance, satisfaction; support; technologies, facing challenges), through several indicators, including the quality of conformity (GOF) Goodness of Fit. If the result of (GOF) is less than or equal to (0.1), then this indicates that the model is invalid. If it is greater than or equal to (0.1) and less than (0.25), the model has little validity. If it is greater than or equal to (0.25) and less than (0.36), the model has an average validity. Whereas, if it is greater than or equal to (0.36), that indicates that the model is highly valid (Wetzel's et al., 2009: 187). Moreover, through the coefficient of determination (R<sup>2</sup>) Squared Multiple Correlations, the independent variable can interpret the dependent variable. If the value of (R<sup>2</sup>) is higher than (0.67), the interpretation is strong. If it is less than (0.67) and higher than equal (0.33), then the interpretation is moderate, and if it is less than (0.33) and higher than or equal to (0.19), then the interpretation is weak. If it is less than (0.19), the prescription is not acceptable (Hensley et al., 2009: 303). With the help of the Amos statistical program v.24, the extent of the effect of accepting or rejecting the hypothesis was determined as follows:

### **Test of The Main Effect Hypothesis**

Figure (2) shows the test of the main impact hypothesis, as a model was built that explains the nature of the relationship between each of the dimensions of the independent variable, the learning crisis management strategy (LCMS). It consists of fifteen items, and the dimensions of the adopted variable, the effectiveness of electronic learning (ELE), which consists of twenty-three items. The test results show the compatibility of indicators of conformity quality based on the Structural Equations Modeling model, and the result is shown in Table (2) below.

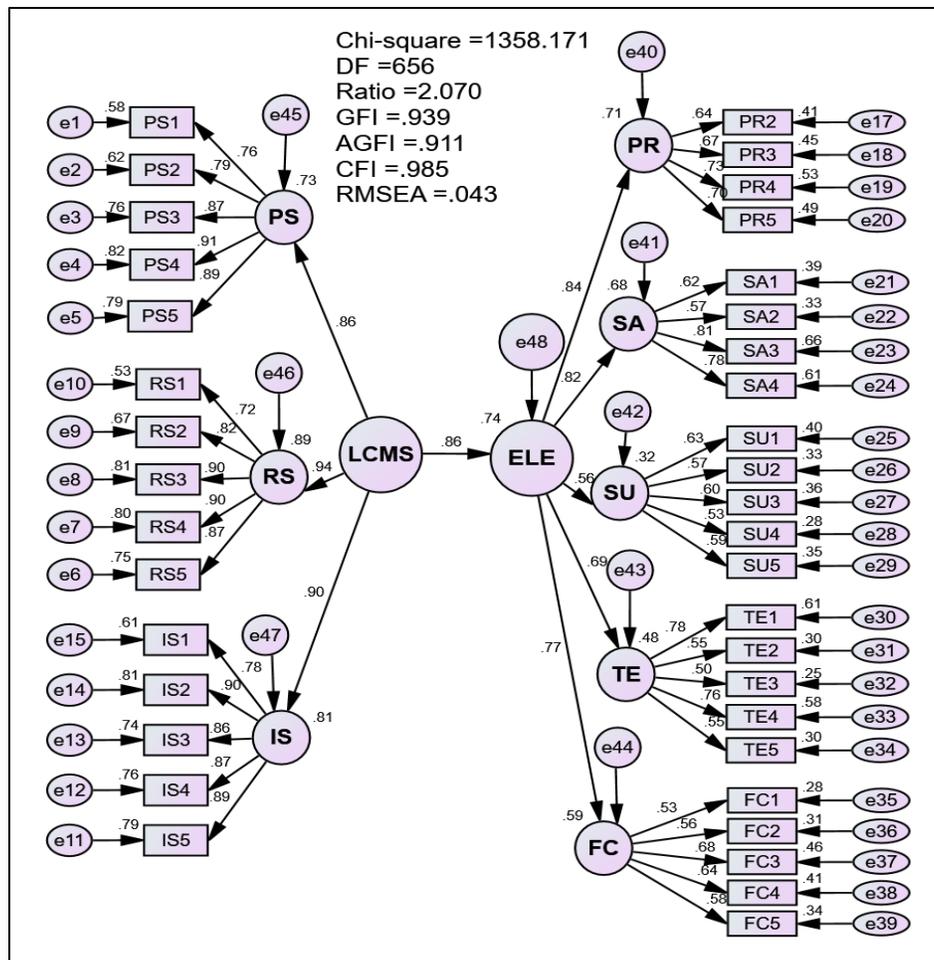


Figure 2 The main effect hypothesis test form

Figure (2) shows that the results of match quality in all indicators of the main effect hypothesis test model were higher than (0.25). This indicates the high validity of the model, and the value of ( $R^2 = 0.744$ ), which is higher than (0.67), meaning that the ability of the learning crisis management strategy variable to explain the effectiveness of e-learning was strong. Based on the above indicators, the results show a significant negative effect of the learning crisis management strategy on the effectiveness of e-learning. This confirms the validity of the main hypothesis under the current study, shown in Table (2) below.

Table 2 The effect of the dimensions of the learning crisis management strategy on the effectiveness of e-learning

Path	Estimate	Estimate	C.R.	P
	Standardized Regression Weights	Squared Multiple Correlations		
ELE <--- LCMS	0.863	0.744	7.481	.000

### Test of Sub-Hypotheses of Influence

There is a significant effect of the proactive strategy dimension on the effectiveness of e-learning at the macro level. Figure (3) shows the results of the first sub-sub-hypothesis test, as a model was constructed that explains the nature of the relationship between the five-paragraph pre-emptive strategy dimension (P.S.) and the dimensions of the adopted variable (ELE), consisting of twenty-three items. The test results show the conformity of the indicators of conformity quality based on the Structural Equations Modeling model, shown in Table (3) below.

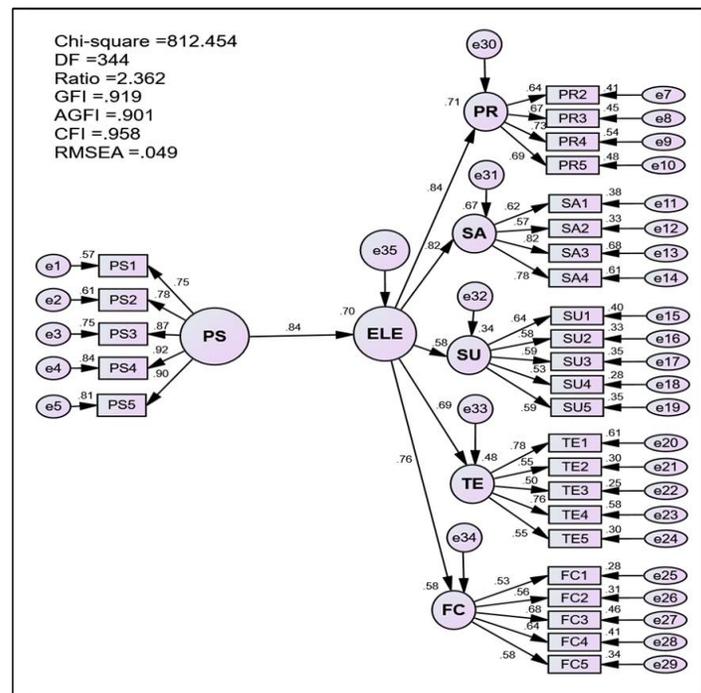


Figure 3 The first sub-hypothesis effect test form

The results of the match quality in all indicators of the first sub-hypothesis test model were higher than equal (0.25). This indicates the high validity of the model and that the value of ( $R^2 = 0.702$ ) is higher than (0.67), meaning that the ability of the pre-emptive strategy dimension to explain the effectiveness of e-learning was strong. Based on the indicators, the test results prove the existence of a significant negative effect of the pre-emptive strategy dimension on the effectiveness of e-learning. This confirms the validity of the first sub-hypothesis under the current study and is shown in Table (3) below.

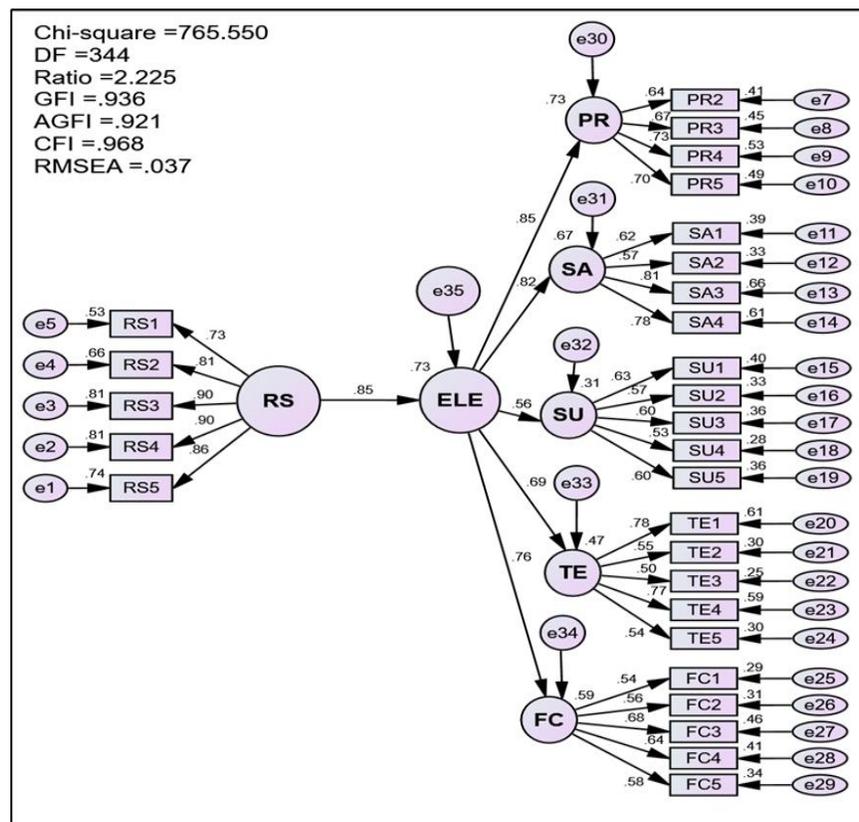
Table 3 Summary of the SOM approaches

Path	Estimate	Estimate	C.R.	P
	Standardized Regression Weights	Squared Multiple Correlations		
ELE <--- PS	0.838	0.702	6.770	000

In this regard, the results of the first sub-hypothesis effect test were consistent with several previous studies such as Todorova & Andersen (2011), Toll et al. (2017), Edelhauser & Dima (2020).

*There is a significant effect of the response strategy dimension on the effectiveness of e-learning at the macro level.*

Figure (4) illustrates the second sub-hypothesis test. A model has been constructed that explains the nature of the relationship between the response strategy dimension (R.S.), consisting of five items, and the dimensions of the adopted variable, e-learning effectiveness (ELE), composed of twenty-three items. The test results show conformity quality indicators based on the Structural Equations Modeling model, shown in Table (4) below.



**Figure 4 The second sub-hypothesis effect test form**

In addition, Figure (4) shows that the results of the match quality in all indicators of the second sub-hypothesis test model were higher than or equal to (0.25). This indicates the high validity of the model, and the value of ( $R^2 = 0.725$ ), which is higher than (0.67), meaning that the ability of the response strategy dimension to explain the effectiveness of

e-learning was strong. Therefore, based on the indicators, the test results prove a significant negative effect of the response strategy dimension on the effectiveness of e-learning. This confirms the validity of the second sub-hypothesis under the current study and is shown in Table (4) below.

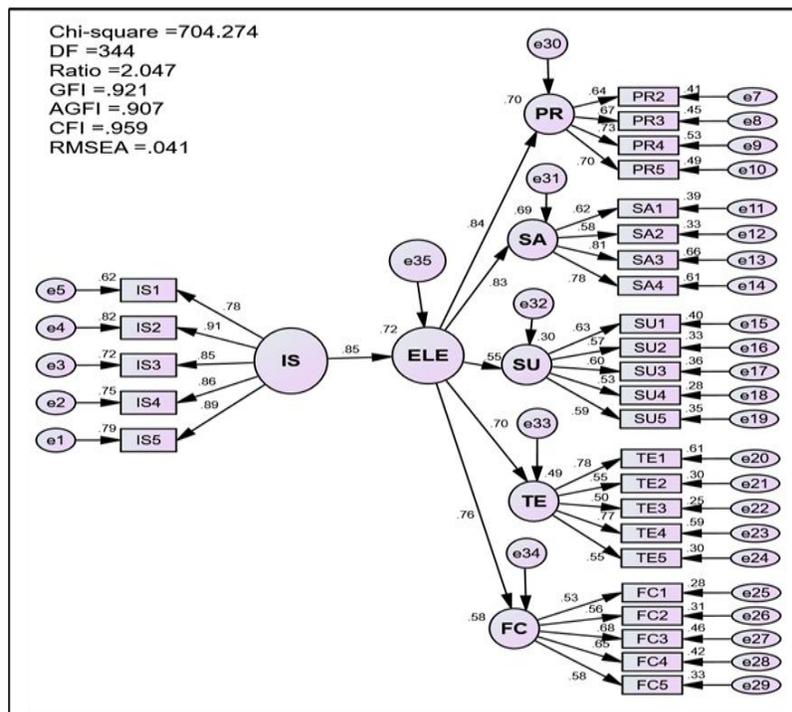
**Table 4 Summary of the SOM approaches**

Path			Estimate	Estimate	C.R.	P
			Standardized Regression Weights	Squared Multiple Correlations		
ELE	<---	RS	0.852	0.725	8.316	.000

The results of the second sub-hypothesis test were consistent with several previous studies, such as Seville et al. (2012); Huang et al. (2020).

*There is a significant effect of the interactive strategy dimension on the effectiveness of e-learning at the macro level.*

Figure (5) illustrates the third sub-hypothesis test, as a model was constructed that explains the nature of the relationship between the interactive strategy dimension (I.S.), consisting of five items, and the dimensions of the adopted variable, e-learning effectiveness (ELE), which consists of twenty-three items. The test results show the conformity of the indicators of conformity quality based on the Structural Equations Modeling model, shown in Table (5) below.



**Figure 5 The third sub-hypothesis effect test form**

Figure (5) shows that the results of match quality in all indicators of the third sub-model effect hypothesis test were more significant than or equal to (0.25). This result indicates the high validity of the model, and the value of ( $R^2 = 0.722$ ), which is higher than (0.67), meaning that the ability of the interactive strategy dimension to explain the effectiveness of e-learning was strong. Based on the indicators, the test results showed a significant negative effect of the interactive strategy dimension on the effectiveness of e-learning. Therefore, it confirms the validity of the third sub-hypothesis under the current study, shown in Table (5).

**Table 5 Summary of the SOM approaches**

Path	Estimate	Estimate	C.R.	P
	Standardized Regression Weights	Squared Multiple Correlations		
ELE <--- IS	0.850	0.772	8.817	000

The results of the third sub-hypothesis test were consistent with several previous studies such as Rhema & Miliszewska (2012); Arthur (2017); Alqahtani & Rajkhan (2020).

## Conclusions

The study results show that there is a significant effect of the learning crisis management strategy on the effectiveness of e-learning. These results confirm the need for the university to develop a strategy to manage the learning crisis to continue the educational process and keep pace with the age of technology and scientific progress by creating the effectiveness of e-learning. The results also show a significant impact of the proactive strategy dimension on the effectiveness of e-learning at the macro level. This indicates that the university has strategic plans to face the learning crisis to continue the educational process. In addition, there is a significant impact of the response strategy on the effectiveness of e-learning at the macro level. This indicates that the university is ready to face the learning crisis to continue the educational process. Finally, the results also show a significant impact of the interactive strategy dimension on the effectiveness of e-learning at the macro level. This indicates that the university has high competencies ready to face the learning crisis to continue the educational process and keep pace with the developments of the times. Therefore, when developing plans for a learning crisis management strategy, all employees must make every effort to prepare for the crisis by offering ideas that can be used.

Furthermore, modern educational programs should be used by reformulating some curricula to suit e-learning programs by faculty teachers and moving away from the usual teaching methods, which helps to face challenges considering the learning crisis. On the other hand,

an electronic learning unit must be established in colleges linked to the e-learning center at the university to facilitate work tasks and reduce pressure on the center. Furthermore, information technology must be an essential tool in the educational process and train students in university colleges to use e-learning tools in the first stage of university education. Furthermore, attention should also be paid to developing the effectiveness of e-learning in universities and spreading the culture of e-learning among students to achieve the most significant possible interaction with this type of education. Finally, it is necessary to provide an appropriate educational structure to implement the effectiveness of e-learning in colleges and remove all obstacles, whether human, material, or technical, that lead to its non-spread in the educational process and at various stages. The study explores the nature of the relationship between the learning crisis management strategy variable and the e-learning effectiveness variable in light of the COVID-19 epidemic to continue and develop the educational process and increase the scientific sobriety in universities that would raise the level of higher education in Iraq. Therefore, we suggest expanding the scope of the research to include topics that promote this area, including the following:

- The role of the learning crisis management strategy in the continuation of the e-learning system after the learning crisis ends.
- The role of the learning crisis management strategy in establishing an e-learning unit.
- The role of the learning crisis management strategy in reducing the interruption of the educational process.
- The role of the learning crisis management strategy in promoting higher education.
- The role of developing the effectiveness of e-learning in raising the level of sobriety of the educational process.

## References

- Agudo-Peregrina, Á.F., Iglesias-Pradas, S., Conde-González, M.Á., & Hernández-García, Á. (2014). Can we predict success from log data in VLEs? Classification of interactions for learning analytics and their relation with performance in VLE-supported F2F and online learning. *Computers in Human Behavior, 31*, 542-550.
- Al-Fraihat, D., Joy, M., & Sinclair, J. (2020). Evaluating E-learning systems success: An empirical study. *Computers in Human Behavior, 102*, 67-86.
- Al Eid, N.A., & Arnout, B.A. (2020). Crisis and disaster management in the light of the Islamic approach: COVID-19 pandemic crisis as a model (a qualitative study using the grounded theory). *Journal of Public Affairs, 20*(4).
- Albers, S., & Rundshagen, V. (2020). European airlines' strategic responses to the COVID-19 pandemic (January-May, 2020). *Journal of air transport management, 87*.
- Aparicio, M., Bacao, F., & Oliveira, T. (2016). An e-learning theoretical framework. *An e-learning theoretical framework* (1), 292-307.

- Aydin, A., Sarier, Y., & Uysal, S. (2013). The Effect of School Principals' Leadership Styles on Teachers' Organizational Commitment and Job Satisfaction. *Educational sciences: Theory and practice, 13*(2), 806-811.
- Bar-On, R. (2005). The impact of emotional intelligence on subjective well-being. *Perspectives in education, 23*(1), 41-62.
- Barteit, S., Guzek, D., Jahn, A., Bärnighausen, T., Jorge, M.M., & Neuhan, F. (2020). Evaluation of e-learning for medical education in low-and middle-income countries: A systematic review. *Computers & Education, 145*.
- Boin, A., & McConnell, A. (2007). Preparing for critical infrastructure breakdowns: the limits of crisis management and the need for resilience. *Journal of Contingencies and Crisis Management, 15*(1), 50-59.
- Bundy, J., Pfarrer, M. D., Short, C.E., & Coombs, W.T. (2017). Crises and crisis management: Integration, interpretation, and research development. *Journal of management, 43*(6), 1661-1692.
- Caldwell, C., Dixon, R.D., Floyd, L.A., Chaudoin, J., Post, J., & Cheokas, G. (2012). Transformative leadership: Achieving unparalleled excellence. *Journal of Business Ethics, 109*(2), 175-187.
- Campbell, D.J. (2000). The proactive employee: Managing workplace initiative. *Academy of Management Perspectives, 14*(3), 52-66.
- Chen, Y.C., Hwang, R.H., & Wang, C.Y. (2012). Development and evaluation of a Web 2.0 annotation system as a learning tool in an e-learning environment. *Computers & Education, 58*(4), 1094-1105.
- Cheok, M.L., & Wong, S.L. (2015). Predictors of e-learning satisfaction in teaching and learning for school teachers: A literature review. *International Journal of Instruction, 8*(1), 75-90.
- Coombs, W.T. (2007). Protecting organization reputations during a crisis: The development and application of situational crisis communication theory. *Corporate reputation review, 10*(3), 163-176.
- Curran, C. (2004). Strategies for E-Learning in Universities. Research & Occasional Paper Series: CSHE. 7.04. *Center for Studies in Higher Education*.
- Eppich, W.J., Hunt, E.A., Duval-Arnould, J.M., Siddall, V.J., & Cheng, A. (2015). Structuring feedback and debriefing to achieve mastery learning goals. *Academic Medicine, 90*(11), 1501-1508.
- Gikandi, J.W., Morrow, D., & Davis, N.E. (2011). Online formative assessment in higher education: A review of the literature. *Computers & Education, 57*(4), 2333-2351.
- Grebennikov, L., & Shah, M. (2013). Monitoring trends in student satisfaction. *Tertiary Education and Management, 19*(4), 301-322.
- Heydarian, A., Carneiro, J.P., Gerber, D., Becerik-Gerber, B., Hayes, T., & Wood, W. (2015). Immersive virtual environments versus physical built environments: A benchmarking study for building design and user-built environment explorations. *Automation in Construction, 54*, 116-126.
- Holsapple, C.W., & Lee-Post, A. (2006). Defining, assessing, and promoting e-learning success: An information systems perspective. *Decision sciences journal of innovative education, 4*(1), 67-85.

- Jang, J., Jo, W., & Kim, J. S. (2020). Can employee workplace mindfulness counteract the indirect effects of customer incivility on proactive service performance through work engagement? A moderated mediation model. *Journal of Hospitality Marketing & Management*, 29(7), 812-829.
- Johnson, L., Becker, S.A., Cummins, M., Estrada, V., Freeman, A., & Hall, C. (2016). *NMC horizon report: 2016 higher education edition*: The New Media Consortium.
- Kear, K., Rosewell, J., Williams, K., Ossiannilsson, E., Rodrigo, C., Sánchez-Elvira Paniagua, Á., & Mellar, H. (2016). *Quality assessment for e-learning: a benchmarking approach*. In: European Association of Distance Teaching Universities.
- Klein-Collins, R. (2012). Competency-Based Degree Programs in the US: Postsecondary Credentials for Measurable Student Learning and Performance. *Council for Adult and Experiential Learning*.
- Kurt, Ö.E. (2019). Examining an e-learning system through the lens of the information systems success model: Empirical evidence from Italy. *Education and Information Technologies*, 24(2), 1173-1184.
- Kusurkar, R., Ten Cate, T.J., Vos, C., Westers, P., & Croiset, G. (2013). How motivation affects academic performance: a structural equation modelling analysis. *Advances in health sciences education*, 18(1), 57-69.
- Lourenço, M., Andrade, A.I., & Byram, M. (2020). Representations of internationalisation at a Portuguese higher education institution: from institutional discourse to stakeholders' voices.
- Mills, B.R., & Keremah, O.M. (2020). Crisis Management and Organisational Agility: A Theoretical Review. *International Journal of Innovative Research and Advanced Studies*, 7(5), 5-12.
- Moerschell, L., & Novak, S.S. (2020). Managing crisis in a university setting: The challenge of alignment. *Journal of Contingencies and Crisis Management*, 28(1), 30-40.
- Murphy, M. (2021). Preventing the Next Financial Failure Post-COVID-19. Available at SSRN 3776649.
- Mwanza, D., & Engeström, Y. (2005). Managing content in e-learning environments. *British Journal of Educational Technology*, 36(3), 453-463.
- Nweke, H.F., Teh, Y.W., Al-Garadi, M.A., & Alo, U.R. (2018). Deep learning algorithms for human activity recognition using mobile and wearable sensor networks: State of the art and research challenges. *Expert Systems with Applications*, 105, 233-261.
- Omondi, A.A. (2020). Effect of Organizational Sponsorship, Career Management Behaviour and Proactive Personality in Predicting Managers' Subjective Career Success. *International Journal of Human Resource Studies*, 10(4), 208219-208219.
- Pearlin, L.I., & Bierman, A. (2013). Current issues and future directions in research into the stress process. In *Handbook of the sociology of mental health*, Springer, 325-340.
- Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020). Online university teaching during and after the Covid-19 crisis: Refocusing teacher presence and learning activity. *Postdigital Science and Education*, 2(3), 923-945.
- Redmond, E. (2013). Competency models at work: The value of perceived relevance and fair rewards for employee outcomes. *Human Resource Management*, 52(5), 771-792.

- Rüth, M., & Kaspar, K. (2017). The E-Learning Setting Circle: First Steps Toward Theory Development in E-Learning Research. *Electronic Journal of e-Learning, 15*(1), 94-104.
- Schimmelfennig, F. (2021). Rebordering Europe: external boundaries and integration in the European Union. *Journal of European Public Policy, 28*(3), 311-330.
- Shavelson, R.J. (2010). On the measurement of competency. *Empirical research in vocational education and training, 2*(1), 41-63.
- Shee, D.Y., & Wang, Y.S. (2008). Multi-criteria evaluation of the web-based e-learning system: A methodology based on learner satisfaction and its applications. *Computers & Education, 50*(3), 894-905.
- Shih, M., Feng, J., & Tsai, C.C. (2008). Research and trends in the field of e-learning from 2001 to 2005: A content analysis of cognitive studies in selected journals. *Computers & Education, 51*(2), 955-967.
- Snowden, D.J., & Boone, M.E. (2007). A leader's framework for decision making. *Harvard business review, 85*(11), 68.
- Thompson, J.A. (2005). Proactive personality and job performance: a social capital perspective. *Journal of Applied psychology, 90*(5), 1011-1017.
- Ulmer, R.R., Seeger, M.W., & Sellnow, T.L. (2007). Post-crisis communication and renewal: Expanding the parameters of post-crisis discourse. *Public Relations Review, 33*(2), 130-134.
- Valverde-Berrocoso, J., Garrido-Arroyo, M.D.C., Burgos-Videla, C., & Morales-Cevallos, M. B. (2020). Trends in educational research about e-learning: A systematic literature review (2009–2018). *Sustainability, 12*(12), 5153.
- Wang, J., & Hutchins, H.M. (2010). Crisis management in higher education: what have we learned from Virginia tech? *Advances in Developing Human Resources, 12*(5), 552-572.
- Votina, E.M., & Votinov, M.V. (2019). Information society: Analyzing problems and prospects of using information technologies, computers and communication networks. *Webology, 16*(1), 86-113.