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ACCEPTANCE of E-LEARNING USING ARTIFICIAL INTELLIGENCE IN MILITARY EDUCATION PROCESS

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ABSTRACT

This study investigates the level of acceptance of e-learning using artificial intelligence in the military education process from students and teachers of Joint Command & Staff College (JCSC). A quantitative approach was the choice to conduct this study, where a questionnaire with closed-ended questions has been distributed among a sample of 240 JCSC's students and teachers. Still, the number of retrieved questionnaires that are valid for analysis reached 207 questionnaires. The collected responses were analyzed by SPSS 23. The results showed that the application of AI and e-learning is witnessing a

remarkable development in recent years. The UAE government has a great interest in adopting fourth-generation technologies such as AI and e-learning in its civil and military institutions through allocating comprehensive strategies and budgets for their implementation. The analysis also confirmed that despite the importance of e-learning and the benefits of integrating AI in military education, this type of education, like other methods of education, faces some obstacles and challenges that may limit its use, where solutions must be sought to overcome them and maximize the use of these technologies. It was concluded there is statistically positive significant relationships between the three factors: the current AI and e-learning application; strategies and budgets set by the state to implement AI and e-learning; the availability of critical success factors in applying AI and e-learning in military colleges process and the improvement of flow at the significance level $p=0.000 < 0.05$. However, challenges encountered by AI and e-learning's application in the military education process are strongly but negatively correlated with the acceptance of AI and e-learning in Military colleges. Furthermore, those four variables explain (98.5%) of the variation and change in the acceptance of AI and e-learning in military colleges. The researcher recommends conducting a study on the requirements for designing and developing an AI system in the military educational environment and examining the possibility of creating a smart AI system that produces and evaluates the exams and monitors the performance accurately.

Keywords: E-learning, Artificial Intelligence, Military Colleges.

ملخص البحث

تبحث هذه الدراسة في مستوى قبول التعلم الإلكتروني باستخدام الذكاء الاصطناعي في عملية التعليم العسكري من كان النهج الكمي هو اختيار إجراء هذه الدراسة ، (JCSC) الطلاب والمدرسين في كلية القيادة والأركان المشتركة ومع ذلك ، بلغ عدد الاستبيانات JCSC. حيث تم توزيع استبيان بأسئلة مغلقة على عينة من 240 طالباً ومعلمًا في وأظهرت النتائج أن SPSS 23 المسترجعة الصالحة للتحليل 207 استبانة. تم تحليل الردود التي تم جمعها بواسطة تطبيق الذكاء الاصطناعي والتعليم الإلكتروني يشهدان تطوراً ملحوظاً في السنوات الأخيرة. تهتم حكومة الإمارات العربية المتحدة بشكل كبير بتبني تقنيات الجيل الرابع مثل الذكاء الاصطناعي والتعليم الإلكتروني في مؤسساتها

المدنية والعسكرية من خلال تخصيص استراتيجيات وميزانيات شاملة لتنفيذها. كما أكد التحليل أنه على الرغم من أهمية التعلم الإلكتروني وفوائد دمج الذكاء الاصطناعي في التعليم العسكري ، إلا أن هذا النوع من التعليم ، كغيره من أساليب التعليم ، يواجه بعض العقبات والتحديات التي قد تحد من استخدامه ، حيث يجب البحث عن حلول التغلب عليها وتعظيم استخدام هذه التقنيات. وخلص إلى وجود علاقات ذات دلالة إحصائية إيجابية بين العوامل الثلاثة: الذكاء الاصطناعي الحالي وتطبيق التعلم الإلكتروني. الاستراتيجيات والميزانيات التي تضعها الدولة لتنفيذ الذكاء الاصطناعي والتعليم الإلكتروني ؛ توافر عوامل النجاح الحاسمة في تطبيق الذكاء الاصطناعي والتعلم الإلكتروني ومع ذلك ، فإن التحديات التي $p = 0.000 < 0.05$ في عملية الكليات العسكرية وتحسين التدفق عند مستوى الدلالة يواجهها تطبيق الذكاء الاصطناعي والتعلم الإلكتروني في عملية التعليم العسكري ترتبط ارتباطاً وثيقاً ولكن سلبياً بقبول الذكاء الاصطناعي والتعليم الإلكتروني في الكليات العسكرية. علاوة على ذلك ، فإن هذه المتغيرات الأربعة تفسر (98.5%) التباين والتغير في قبول الذكاء الاصطناعي والتعليم الإلكتروني في الكليات العسكرية. وتوصي الباحثة بإجراء دراسة حول متطلبات تصميم وتطوير نظام ذكاء اصطناعي في البيئة التعليمية العسكرية ، ودراسة إمكانية إنشاء نظام ذكاء اصطناعي ذكي ينتج ويقيم الاختبارات ويراقب الأداء بدقة

الكلمات المفتاحية: التعلم الإلكتروني ، الذكاء الاصطناعي ، الكليات العسكرية

1. Introduction

The current educational studies era is linked positively with developments and improvements in the digital world (Arslan, 2008). Furthermore, computer technologies have a significant role in determining education's function in enhancing learning and teaching experiences. In today's generation, electronic learning (e-learning) is widely used for reaching the desired educational consequences in various educational conditions (Bransford & Brown, 2000).

Today's revolution is based on new knowledge and innovation. It includes the era of AI, which provides information on how to improve and fill some of the gaps in learning and teaching and allow colleges and teachers to practice the educational process better than ever before. (Almohammadi et al., 2017).

The flexibility and ease provided by artificial intelligence and e-learning are among the most prominent drivers that will make countries adopt them in their educational systems. For example, reports of global importance, such as the Horizon Report (a reference in educational technology), predict that will implement AI in higher education within a period of four to five years (Becker et al., 2017). Regarding the study of Leon Rodriguez and Vigna Brito (2017), they mentioned that AI contributes to changing education by automating teaching tasks. Programs specialize in personalized education, discover topics that need reinforcement in the classroom, guide and support students outside of the classroom, and intelligently use data to teach and assist students.

Likewise, AI has vast potential in the military sector beyond weapons systems, as it is often referred to as a tool for "boring, dirty, and dangerous" jobs. It also provides artificial intelligence applications to avoid endangering human lives or assigning humans tasks that do not require the human mind's creativity. AI systems can also reduce military logistics and sensing costs, enhance connectivity and transparency in complex systems, and advance the peacekeeping agenda by communicating military actors' capabilities and motivations more effectively (Özdemir, 2019; Kania, 2019).

Although AI has become the study of the modern era for many researchers, and despite the great continuous endeavor to be in the first place among Arab countries in adopting AI and pioneering in information technology (Halawa, 2018), there is no such study in this field. As it confirms the extent to which teachers and students accept this technology, whether in the public education sector or the military education sector, mainly, which was the motivation behind this study.

2. Problem Statement

Military education includes training programs ranging from the primary curriculum to in-service education and advanced education. After completing the primary curriculum, military officers should receive specialized short-term training in schools of various military branches, including the schools of infantry, armor, the

artillery of the army, etc. (Seow et al., 2005). Due to officers and military personnel's job responsibilities, officers in military colleges rarely have time to leave their training to receive an education on a traditional campus. To solve this dilemma, distance learning and e-learning systems are now being introduced in recent years due to the increasing need to train non-commissioned officers in rapidly changing international conflict scenarios (TRADOC, 2001).

Likewise, the government of the United Arab Emirates pays excellent attention to military education and training. It seeks to meet military colleges and institutes' urgent needs by taking advantage of new technology to raise the learning level (Revolvy, 2018). In this way, they will avoid finding themselves at some point applying the old traditional method and outdated educational methodologies in a country that established the world's first ministry of artificial intelligence.

Besides, military education students face the same challenges that have been mentioned earlier, most notably the great challenge of lack of time and individual learning differences. Challenges and conflicts are an integral part of any student's daily life, but they differ when it comes to a military college student. Challenges and competitions are more complicated for military students because they have to compete to prove their daily and military tasks.

From the above, the research gap can be summarized in the **absence of artificial intelligence (AI) technology in the military education process**. Despite the significant benefits expected from this technology, the education system is widely accepted among students and military instructors. Such technology includes the specialization process in learning, constructive evaluation of students, the ability to learn in global classrooms, obtain more exciting learning, the ability to monitor and improve performance in line with the tasks of military cadets, save time and effort and take into account individual differences between them. Thus, it can be said that not using this technology in education represents a large study gap and puts tremendous pressure on students to study and prepare to complete the required subjects in a short time, in addition to continuing to perform their military training. Consequently, the researcher feels an urgent need to use new strategies (such as artificial intelligence technology) to solve the problems faced by military cadets that may positively affect their achievement, save time, and ensure their

education (Ramachandran, 2003). In response to this need and this research gap, this study aimed to abridge it by investigating the acceptability of e-learning using artificial intelligence in the military education process.

3. Research Questions

This study has the main question, which is: “**What is the level of acceptance of e-learning using artificial intelligence in the military education process from the perspective of students and teachers?**” and it's subdivided into the following sub-questions:

1. What is the current level of artificial intelligence (AI) and e-learning in the military education system?
2. Is there a strategy and budget dedicated to applying AI to the United Arab Emirates in developing military education?
3. What are the challenges that stand in implementing this smart system in military colleges? What are the best ways to overcome them and apply AI effectively from students' and teachers' viewpoints?
4. To what extent do teachers and students agree on the availability of critical success factors (personalization, quality of the course, providing useful feedback to students, provision of global classrooms (online), availability of skilled teachers, making education more exciting, and proficiency in performance monitoring) in applying the artificial intelligence and e-learning system in military colleges?

4. Research Objectives

The prime objective of this study is to “Identifying the level of acceptance of e-learning using AI in the military education process from the viewpoint of students and teachers.”

The main objective of the study can be achieved by achieving the following aims:

1. Identifying the current level of application of artificial intelligence (AI) and e-learning in the military education system.
2. Detecting the extent of the interest in developing a strategy and budget for AI applications to build military education.

3. Identifying the size of the challenges that stand in implementing this smart system in the military colleges and the best ways to overcome them and apply AI effectively from students' and teachers' viewpoints.
4. Recognizing the extent to which teachers and students agree on the availability of critical success factors (personalization, quality of the course, providing useful feedback to students, provision of global classrooms (online), availability of skilled teachers, making education more exciting and proficiency in performance monitoring) in the application of AI and e-learning system in military colleges.

5. LITERATURE REVIEW

5.1 The Education in the UAE

Ridge, Kippels & ElAsad (2015) indicated in their study that interest in education has developed with the establishment of the federation based on the UAE government's explicit constitutional commitment to provide education. This commitment has been realized, as evidenced by the development of the education sector. The number of students in the 2013/2014 academic year increased more than 19 times, and nine times in terms of the number of schools, since the country.

(AL-AMIRI, 2017) also conducted a study about the Minister of Education has devoted significant attention to developing education at all levels, from kindergarten to secondary school. The UAE has also paid attention to technical and vocational education by expanding institutes of applied technology and sought equality in educational opportunities between the genders, which resulted in similar numbers of male and female students at all levels of education.

Another study generated by (Ridge, Kippels & ElAsad, 2015) for the school education has become compulsory in the Emirates and the right of basic rights for every citizen and citizen since 2012. According to this law, the government is obligated to provide free education to every citizen who has completed six years of age until the end of education (12th grade) or reaching 18, whichever is earlier, through government schools and institutes.

Moreover, (Ridge, Kippels & ElAsad, 2015) and (Warner & Burton, 2017) prepared a study to noted about the United Arab Emirates, with the unlimited support of its leadership, is working to implement the Education Development Plan (2015-2021) by taking advantage of the AI revolution that the world has reached in developing the educational process to equip students with twenty-first-century skills. By diversifying knowledge and learning sources based on the latest technologies and the best educational methods, in a way that ensures building a knowledge society through smart and sustainable education and related scientific and life skills, which require the adoption of e-learning systems and artificial intelligence as modern learning methods.

5.2 An Overview of E-learning Issues in UAE

Ischebeck (2017) indicated in their study that aimed to noted about the E-learning is a modern way of learning that has turned into a vital piece of the Emirati educational system and has changed how they see educating as a whole. E-learning refers to data and communication technologies to enable access to online learning or teaching resources. E-learning has the advantage of meaning any knowledge that is electronically enabled. Individual researchers additionally define this term as any learning that is web-enabled or web-based (Abaidoo, 2015).

Alkandari (2015) indicated in their study that aimed to determine of the success or failure factors affect of e-learning and such smart environments in education. These factors should be taken into care to create a successful and effective e-learning system. Initial experiences have shown that most learners do not continue their e-learning courses. Many learners have a “negative experience” with e-learning, which leads to their acquiring superficial learning.

Salloum’s et al. (2019) study in the Emirati context of the factors affecting the acceptance of e-learning by the Emiratis showed that the success of e-learning systems, in the end, depends on the degree of acceptance of the learner and his ability to apply these systems, and indicated that the obstacles that stand in front of students in their e-learning experiences in the UAE in particular and around the world, in general, include the four main areas: environmental issues in information and communication technology (ICT), student characteristics, student support, and provision of real activities.

Vrazalic et al. (2009) also indicated that among the problems and obstacles facing e-learning and its acceptance in the UAE is the lack of interest in it by faculty members and the belief that this pattern is still secondary that the traditional pattern is the primary and most useful in the educational process. The constant need to train administrators, teachers, and learners on it and the difficulty of designing electronic educational courses according to the required design standards stand in the way of expanding the application of this type of education in the Emirates.

5.3 Artificial Intelligence in Education

Becker (2018) Mentioned in their study that aimed to identify the term artificial intelligence, AI is the ability of the computer to use some codes or algorithms to learn from data and use this knowledge to mimic human decisions in such a situation. Moreover, in education, to promote adaptive learning environments, tools that are flexible, inclusive, personalized, engaging, and effective.

Popenici & Kerr, (2017) mentioned in their study that aimed to development of the use of Artificial Intelligence in teaching and learning in advanced education. The researcher pinpoints some challenges of higher education and student learning within adopting those technologies for student support, learning, teaching, and administration and exploring more directions for analysis. The study concluded with several recommendations, the most important of which it is necessary to focus any analysis on academics' new roles on new learning pathways for higher degree students, with a replacement set of graduate attributes. With a spotlight on imagination, creativity, and innovation, machines can hardly ever replicate the set of skills.

Harris (2018) prepared a study to prepared a study to demonstrate the positives and challenges of artificial intelligence. It concluded that AI techniques might help facilitate "personal learning," improve academic performance, reduce achievement gaps among student groups, increase student engagement and motivation. Despite the positives of AI in education, it faces challenges. Including that it facilitates the school's social learning, that students become less disciplined in classrooms because they receive educational support at home as recommended by the study of the integration of Artificial

Intelligence education, but not entirely because the budget of Artificial Intelligence is not yet clear.

Another study generated by (Hamada & Amal, 2015) for the impact of different patterns of participation in the environment of participatory e-learning. The researcher adopted the analytical method by dividing the students into three groups and conducting the Artificial Intelligence test. They concluded that the three participative (Synergistic-parallel-serial) techniques used are useful in developing achievement and Artificial Intelligence skills. Synergistic participation is also superior to the two types of parallel and continued involvement in developing social intelligence skills. The most important recommendations are the need to increase the effectiveness of participatory patterns of AI skills development.

5.4 Military Education Case Study

Today the Military offers the best educational opportunities for students who intend to seek a college degree. Like service academies, senior military colleges, and maritime academies, these choices provide world-class training and a more profound military culture comprehension. Furthermore, these institutes grant scholarship money in exchange for a period of service (Todaymilitary, 2018).

Military Education entails officers' professional training to prepare them to lead the military force under their command optimally to discharge their duties in peace and war effectively. It starts with recruit training, proceeds to education and training specific to military tasks, and might include extra training during a military career (Sen, 2013).

Military academies and institutes play pivotal strategic roles at several levels. Some related to the technical and technological development of the armies, both in the training and qualification of the national workforce or in the use of advanced combat weapons, imply qualitative mutations in the armies' operational and combat performance.

These academies and institutes represent the scientific and research laboratories to crystallize the prevailing theories of warfare worldwide, analyze them, and study the possibilities and opportunities of benefiting from their elements in the national armies. And then build and develop the combat theories of these armies according to modern developments and developments in this regard, on other levels, such as its role in

creating national identities of the commands and melting them to contribute effectively to support and strengthen the components of national unity (EditorialBoard, 2013).

5.5 Intelligent Tutoring Systems in Education

Dašić, et al. (2016) mentioned in their study that aimed to recognize the role of ITS in the process of education. They reached in their studies that the Intelligent Tutoring Systems (ITS) help improve educating and adapting toward individuals' individual needs. It works to develop collaborative programs among them, and it supports and enhances the way toward educating and learning.

Moreover, Ayturk (2017) prepared a study to presented a general architecture of Intelligent Tutoring Systems and information about ITS improvements and mentioned best ITS practices. A “ZOSMAT” application was explained as a demonstration of how an Intelligent Tutoring System was designed. It is used for either individual learning or classroom environment with a person's tutor's guidance throughout a proper education process. The study concluded that the (ITSs) application is a powerful tool for improving students' learning performance.

However, Farhad (2011), indicated in their study that aimed to introduce teaching methods adapted to students through intelligent touring systems (ITS) and using computer technologies to facilitate teaching and comparing students who learn intelligent touring systems for other students. The results indicate that students who learn with Artificial Intelligence techniques have a high learning rate and are superior in learning better than other students with low rates.

Feng, Heffernan & Koedinger (2010), It aimed at how to model students in an Intelligent Tutoring System (ITS). In this study, the researcher reviews and summarizes some of the primary studies done with the system. Usually, it is trusted that assessment gets harder if students are permitted to learn during the test, as it is then similar to trying to hit a moving target. So, the results are surprising that giving students tutoring while they are assessed improves students' knowledge. Also, review our attempts to give educators feedback dependent on fine-grained skill models. Generally, the study concludes that using ITS to do assessment appears to be a practical method for managing the difficulty that every minute spent testing students takes time away from instruction

6. RESEARCH METHODOLOGY

6.1 Research Approach

To achieve the objectives of this research and not to interfere with its results, I adopted the quantitative descriptive approach based on the nature of the study and the large experimental data obtained from the participants in the study sample.

6.2 Research Strategy

The data collection phase will be performed by distributing research tools (questionnaire) to the selected sample and collecting their responses. After that, the analysis phase would take place. The researcher will implement several analytical, statistical approaches for collecting quantitative data to determine the answers to the research questions and achieve its aims.

6.3 Population and Sampling

Research studies are usually carried out on a sample of subjects because it is impossible to approach all the individuals in a population to collect data. So, in this study, the population is Armed Forces colleges, institutes, and schools. The researcher chose one college of the armed forces as a sample, namely the Joint Command & Staff College (JCSC).

For this research, the sample size of all the targeted population (Military academies, colleges, schools) are more than 700 students. This study's sample size would be 240 respondents (Students and Teachers) on which the questionnaire is to be administered.

6.4 Data Collection and Analysis

For this study, the main instrument of data collection is a questionnaire. The questionnaire is a set list of questions designed to gather individuals' responses on a given topic about personal information, intention, attitude, activities or behavior, and demographic characteristics. The researcher has relied on previous studies and articles related to the current study's subject in designing the questionnaire. The researcher has depended on them to choose the correct statements that suit the nature of recent research.

(SPSS) is a software called “Statistical Package for Social Science” used in preliminary analyses both in pilot and field data analyses? Various statistical analytical approaches utilized in the context of a questionnaire designed and data analysis purposes; for example, the researcher used the alpha Cronbach test, as shown previously,

to estimate the internal consistency reliability of the questionnaire items before distributing it over the research sample. However, for the analysis of the gathered data and answering the research's questions, the researcher used suitable statistical methods that consist of:

- (i) Percentages and Frequencies.
- (ii) Arithmetic Mean and Standard Deviation.
- (iii) Multiple Linear Regression Analysis

7. DATA ANALYSIS & RESULTS

7.1 Descriptive Data Analysis Results

To descriptively identify the current AI and e-learning application, strategies and budgets set by the state to implement AI and e-learning challenges encountered AI and e-learning's application in the military education process, the availability of critical success factors in applying AI and e-learning in military colleges as well as the degree of acceptance of the application of AI and e-learning in the military education system; the descriptive statistics (arithmetic means) of the responses and their ranks, which were elicited using a five-point Likert scale were calculated via SPSS, where means ranging from (1-1.80) were considered very low, from (1.81 to 2.60) were deemed to below, from (2.61-3.40) were considered moderate, from (3.41-4.20) were considered high and from (4.21-5.00) were considered very high.

7.2 Inferential Data Analysis (The Relationship between Dependent and Independent Variables)

To test the effect of the four independent variables (the current AI and e-learning application; strategies and budgets set by the state to implement AI and e-learning; challenges encountered AI and e-learning's application in the military education; the availability of critical success factors in applying AI and e-learning in military colleges process) on the dependent variable (acceptance of the application of AI and e-learning in the military education system) and the extent to which each of the four independent variables statistically relates to the approval of the application of AI and e-learning in the military colleges, Pearson correlation and multiple linear regression analyses were

implemented utilizing SPSS and the results were as indicated in the following Table 1 and Table 2 below:

TABLE 1: PEARSON CORRELATION VALUES OF INDEPENDENT VARIABLES WITH THE DEPENDENT VARIABLE

No.	Independent variables	Pearson correlation (r)	Significance (α)
1	The current AI and e-learning application	0.730**	0.000
2	Strategies and budgets set by the state to implement AI and e-learning.	0.707**	0.000
3	Challenges encountered AI and e-learning applications in the military education process.	-0.821**	0.000
4	The availability of critical success factors in applying AI and e-learning in military colleges	0.728**	0.000

** Correlation is significant at the 0.01 level (2-tailed)

According to the previous Table 4.6, it can be concluded that all of the four independent variables have a significant and approximately strong correlation with the dependent variable of the acceptance of the application of AI and e-learning in the military colleges.

Starting with the first independent variable (The current AI and e-learning application) where Pearson correlation value ($r= 0.730$), $p=0.000 < 0.01$, followed secondly by (Strategies and budgets set by the state to implement AI and e-learning) where Pearson correlation value ($r= 0.707$), $p=0.000 < 0.01$ and thirdly by (The availability of critical success factors in applying AI and e-learning in military colleges) where Pearson correlation value ($r= 0.728$), all show positive and strong correlations with the acceptance of the application of AI and e-learning in the military education system, except for (Challenges encountered AI and e-learning's application in the military education process) where Pearson correlation value ($r= -0.821$), $p=0.000 < 0.01$, indicating that there is a strongly but negatively relation of it with the acceptance of the application of AI and e-learning in military colleges.

Moreover, multiple linear regression analysis was conducted between the four independent variables and the acceptance of AI and e-learning in the military colleges as a dependent variable. The results were as shown in Table 4.7:

TABLE 2: MULTIPLE REGRESSION OF THE IMPACT OF THE INDEPENDENT FOUR FACTORS ON THE ACCEPTANCE OF THE APPLICATION OF AI AND E-LEARNING IN THE MILITARY COLLEGES

Variables	Beta	Sig
The current AI and e-learning application	0.296	0.000
Strategies and budgets set by the state to implement AI and e-learning.	0.582	0.000
Challenges encountered AI and e-learning applications in the military education process.	-0.007	0.047
The availability of critical success factors in applying AI and e-learning in military colleges	0.059	0.041
R	0.993	
R²	0.985	

From the above Table 4.7, the multiple correlation coefficient is ($R = 0.993$),, indicating that a positive correlation between the four independent variables (the current AI and e-learning application; strategies and budgets set by the state to implement AI and e-learning; challenges encountered AI and e-learning's application in the military education; the availability of critical success factors in applying AI and e-learning in military college process) and acceptance of the application of AI and e-learning in the Military colleges. This means that the independent variables and dependent variable change in the same direction. Moreover, the goodness of fit value of ($R^2=0.985$) indicates that the four independent variables can explain (98.5%) of the variation and change in the acceptance o in the Military colleges.

However, to identify which of the variables have the most influential effect on the acceptance of the application of AI and e-learning in the Military colleges, Standardized (Beta) coefficients (β) and (α) significance levels in the multiple linear regression were used to test that effect. Table 4.7 shows the standardized coefficients (β) values for each independent of the β coefficients were statistically significant for the four variables at the significance level ($\alpha < 0.05$). In terms of the strongest effect of the four variables on the acceptance of AI and e-learning in the military colleges, the level

of impactiveness of these variables depends on the (β) value, the higher (β) value, the higher impact on the dependent variable. Accordingly, the strategies and budgets set by the state to implement AI and e-learning have the strongest effect, followed by the current AI and e-learning application, the availability of critical success factors in applying AI and e-learning in military colleges, and finally from the challenges encountered by AI and e-learning's application in the military education process.

Hence, this proved the impact of the strategies and budgets set by the UAE state to implement AI and e-learning technologies in education, and the availability of critical success factors in the application of them in military colleges, as well as the challenges and problems that will face the process of their application on the extent of their acceptance in the military colleges by teachers and students, which was affirmed by Salloum et al. (2019), Kanwal and Rehman (2017) and Tung et al. (2009), in which they stated that the success of e-learning systems, the degree of learner acceptance and the application of these systems depend on a set of external factors, most notably the strategies adopted by countries in designing these military educational systems, as they must be carefully designed in a way that enables to maximize the interaction between the student and the military educational process to maintain students' attention and maintain motivation. It should also allow the military to conduct e-learning anytime and anywhere and integrates many multimedia, including audio, animation, video, simulation, resources, and online communities in a unified display interface, and enables the user to set the pace of learning and overcome the obstacles related to the lack of interaction between the student and the teacher and the difficulty of evaluating students and others.

8. Discussion the results

The application of AI and e-learning in the UAE is witnessing a remarkable development in recent years. There are positive indications that it will achieve widespread success in the civil and military educational sector in the UAE, as there is consensus that these smart technologies are widely applied in Emirati universities and institutes, as well as the great tendency to adopt them in military education, due to their importance and flexibility compared to traditional education.

There is a great interest from the UAE government in adopting fourth-generation technologies such as AI and e-learning in its civil and military institutions through allocating large strategies and budgets for their implementation. The UAE state allocates part of its budget to the technology and digitization sector. Its universities and military colleges similarly allocate part of their budget to support e-learning and bring in assistive mechanisms for the application of AI.

Despite the importance of e-learning and the benefits of integrating AI in military education at the Emirati JCSC, this type of education, like other methods of education, faces some obstacles and challenges that may limit its use, where solutions must be sought to overcome them and maximize the use of these technologies. The study members of teachers and students, especially teachers, agreed that the use of AI and e-learning may result in difficulty in tracking student progress and in dealing with curricular pressure, as well as that the academic evaluation of students through it will be more difficult, and the relationships and interaction between teacher and student will decrease. This is not liked by teachers who prefer the traditional method of education and still believe that the teacher is the one who plays the main role in the educational process, which has proven to be a false belief later.

The availability of critical success factors for the application of AI and e-learning in the military colleges in the UAE, in terms of the fact that these technologies personalize the teaching method to suit individual learning requirements, as well as the provision of high-quality educational courses, as AI systems can examine curricula and identify gaps in the course content, in addition to being adaptive educational systems which contribute to providing the most relevant content to enhance the learning process. Also, these systems provide the factor of providing skilled teachers and providing online classroom systems, which provide the factor of attractiveness and pleasure in providing content as well as the efficiency of these systems in monitoring performance.

JCSC's students and teachers are receptive and have the ability and motivation to use AI and e-learning in the military education system. Furthermore, accessibility, perceived ease of use, and the perceived benefit in saving time for military personnel

represent the most prominent advantages that increase military students' acceptance of the shift towards e-learning and AI.

The Pearson correlation and multiple linear regression showed the existence of statistically positive significant relationships between the three factors: the current AI and e-learning application; strategies and budgets set by the state to implement AI and e-learning; the availability of critical success factors in applying AI and e-learning in military colleges process and the improvement of patient flow at the significance level $p=0.000 < 0.05$. However, challenges encountered by AI and e-learning's application in the military education process are strongly but negatively correlated with the acceptance of the application of AI and e-learning in Military colleges.

Multiple linear regression analysis indicates that the four independent variables (the current AI and e-learning application; strategies and budgets set by the state to implement AI and e-learning; challenges encountered AI and e-learning's application in the military education; the availability of critical success factors in applying AI and e-learning in military colleges process) can explain (98.5%) of the variation and change in the acceptance of the application of AI and e-learning in the Military colleges. In term of the strongest effect of the four variables on the acceptance of the application of AI and e-learning in the Military colleges, the strategies, and budgets set by the state to implement AI and e-learning has the strongest effect, followed by the current AI and e-learning application, the availability of critical success factors in applying AI and e-learning in military colleges and finally from the challenges encountered AI and e-learning's application in the military education process.

9. Recommendations

In light of the previous discussions and conclusions, the study presented several recommendations, as shown below. The first part is directed to education military Command, while the second part is for military college teachers and educators; the third part is for military college students, in addition to specific recommendations for further future studies.

1. The Education Military Command should embrace the creation and development of an intelligent educational system based on AI and e-learning systems suitable for the military learning environment.
2. Increase teachers' knowledge of the importance of using AI and e-learning applications in the learning environment.
3. The students should request training sessions that will improve students' knowledge of AI applications.

10. Conclusions

Military education includes training programs ranging from the basic curriculum to in-service education and advanced education. Due to officers and military personnel's job responsibilities, officers in military colleges rarely have time to leave their training to receive an education on a traditional campus. To solve this dilemma, distance e-learning systems and AI are now being introduced in recent years due to the increasing need to train non-commissioned officers in rapidly changing international conflict scenarios.

Accordingly, the researcher intended in this study to investigate the level of acceptance of e-learning using AI in the military education process in the UAE from the perspective of students and teachers of JCSC. By identifying the impact of the current application of AI and e-learning, and the strategies and budgets set by the state to implement those modern technologies, as well as the challenges facing this process and the availability of critical success factors on the application of AI and e-learning in military colleges.

The results showed that the application of AI and e-learning in the UAE is witnessing a remarkable development in recent years. There are positive indications that it will achieve widespread success in the UAE's civil and military educational sector. It was also revealed that the UAE government has a great interest in adopting fourth-generation technologies such as AI and e-learning in its civil and military institutions through allocating large strategies and budgets for their implementation. Furthermore, the availability of critical success factors for the application of AI and e-learning in the military colleges in the UAE was also investigated, where the results showed a high availability of them in AI and e-learning in terms of the fact that these technologies

personalize the teaching method to suit individual learning requirements, as well as the provision of high-quality educational courses.

The analysis also confirmed that despite the importance of e-learning and the benefits of integrating AI in military education at the Emirati JCSC, this type of education, like other methods of education, faces some obstacles and challenges that may limit its use, where solutions must be sought to overcome them and maximize the use of these technologies. It was also concluded that there are statistically positive significant relationships between the three factors: the current AI and e-learning application; strategies and budgets set by the state to implement AI and e-learning; the availability of critical success factors in applying AI and e-learning in military colleges process and the improvement of patient flow at the significance level $p=0.000 < 0.05$. However, challenges encountered by AI and e-learning applications in the military education process are strongly but negatively correlated with the acceptance of AI and e-learning in Military colleges. Furthermore, those four variables explain (98.5%) of the variation and change in the acceptance of AI and e-learning in the Military colleges.

Finally, the researcher concluded that technology is not a magic wand. Still, it can only contribute to spreading human desires, expanding their horizons, materializing them, and accelerating their achievement, whatever their type. There is no magic medium for education (and it will never exist). Still, there is powerful technology (such as artificial intelligence technology and e-learning), flexible models for communicating knowledge, smart integration strategies, and effective policies that provide increased access to high-quality education.

REFERENCES

- Abaidoo, V. A., and N. (2015). The role of e-learning, advantages, and disadvantages of its adoption in higher education. *Instructional Technology & Distance Learning*, 12(01).
- AL-AMIRI, A. (2017). *Essential Of School Education in the UAE*.
- Almohammadi, K., Hagra, H., Alghazzawi, D., & Aldabbagh, G. (2017). A Survey of Artificial Intelligence Techniques Employed for Adaptive Educational Systems within E-Learning Platforms. *Journal of Artificial Intelligence and Soft Computing Research*. <https://doi.org/10.1515/jaiscr-2017-0004>
- Arslan, U. (2008). E-LEARNING EXPERIENCE WITH ARTIFICIAL INTELLIGENCE SUPPORTED SOFTWARE: An International Application on English Language Courses (Hakubunkan Shinsha; Vol. 1). Retrieved from <http://dergipark.ulakbim.gov.tr/glokalde/article/view/5000135226>
- Aytu`rk Keles, Rahim Ocak, Ali Keles, A. G. (2009). ZOSMAT: Web-based intelligent tutoring system for the teaching-learning process. *Science Direct*, 36, 1229–1239.
- Becker, D. B. A. (2018). Artificial Intelligence in Education. *Ireland's Yearbook of Education*. Retrieved from <https://educationmatters.ie/artificial-intelligence-in-education/>
- Becker, S. A., Cummins, M., Davis, A., Freeman, A., Hall, C. G., & Ananthanarayanan, V. (2017). *NMC horizon report: 2017 higher education edition* (pp. 1-60). The New Media Consortium.
- Bransford J., Brown A., and C. R. (2000). *How People Learn*. Retrieved from <https://www.nap.edu/read/9853/chapter/13>
- Dašić, P., Dašić, J., Crvenković, B., & Šerifi, V. (2016). A review of intelligent tutoring systems in e-learning. In *Annals of the Oradea University – Fascicle of Management and Technological Engineering* (Vol. 15). <https://doi.org/10.15660/AUOFMTE.2016-3.3276>
- Feng, M., Heffernan, N., & Koedinger, K. (2010). Student modeling in an Intelligent Tutoring System. In *Intelligent Tutoring Systems in E-Learning Environments: Design, Implementation, and Evaluation*. <https://doi.org/10.4018/978-1-61692-008-1.ch011>
- Harris, L. J., and. (2018). Artificial Intelligence (AI) and Education. *Congressional Research*, 7(5700).
- Ischebeck, J. (2017). Using eLearning Technologies To Improve The Quality Of Teaching. Retrieved from eLearning Industry website: <https://elearningindustry.com/elearning-technologies-to-improve-the-quality-of-teaching-using>
- Kania, E. B. (2019). Chinese military innovation in artificial intelligence. *Testimony to the US-China Economic and Security Review Commission*.
- Kanwal, F., & Rehman, M. (2017). Factors affecting e-learning adoption in developing countries—empirical evidence from Pakistan's higher education sector. *IEEE Access*, 5, 10968-10978.
- Özdemir, G. S. (2019). Artificial Intelligence Application in the Military: The Case of the United States and China. SETA Analysis. Retrieved on 26th of September 2020
- Popenici, S., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning*, 12(22).
- Ramachandran, J. O., and S. (2003). *Intelligent Tutoring Systems: Using AI to Improve Training Performance and ROI*. Retrieved from

- https://www.stottlerhenke.com/papers/ITS_using_AI_to_improve_training_performance_and_ROI.pdf
- Revolvy. (2018). Joint Command and Staff College. Retrieved from <https://www.revolvy.com/page/Joint-Command-and-Staff-College>
- Ridge, N. (2011). Education in the UAE's current status and Future Developments. *Emirates Center for Strategic Studies and Research*.
- Ridge, N., Kippels, S., & ElAsad, S. (2015). *Education in ras Al khaimah and the United Arab Emirates*. Retrieved on 26th of September 2020 from: <http://www.alqasimifoundation.com/admin/Content/File-22220185854.pdf>
- Salloum, S. A., Al-Emran, M., Shaalan, K., & Tarhini, A. (2019). Factors affecting the E-learning acceptance: A case study from UAE. *Education and Information Technologies*, 24(1), 509-530.
- Scholar class base. (2018). Education System in the United Arab Emirates. Retrieved from <https://www.scholaro.com/pro/Countries/United-Arab-Emirates/Education-System>
- Sen, G. (2013). Professional Military Education in India: *Journal "Indian Higher Education: Perception, Policies, and Practices*.
- Seow, C., Hughes, J., Newton, D., & Ellis, A. (2005). Effective implementation of e-learning: a case study of the Australian Army. *Journal of Workplace Learning*.
- Tall, T. (2018). Augmented Reality vs. Virtual Reality vs. Mixed Reality – An Introductory Guide. Retrieved from <https://www.toptal.com/designers/ui/augmented-reality-vs-virtual-reality-vs-mixed-reality>
- Todaymilitary. (2018). Military Schools. Retrieved from <https://www.todaymilitary.com/education-training/military-schools>
- TRADOC (2001). *The army distance learning program (TADLP) campaign plan*. United States Army Training and Doctrine Command, Training Development and Analysis Directorate, Fort Monroe, Virginia, Retrieved on 26th of September 2020 from: <http://www.tradoc.army.mil/tadlp/documents/TADLP%20Campaign%20Plan%20SEP2001.pdf>.
- Tung, M. C., Huang, J. Y., Keh, H. C., & Wai, S. S. (2009). Distance learning in advanced military education: Analysis of joint operations course in the Taiwan military. *Computers & Education*, 53(3), 653-666.
- US Government Accountability Office (2004). *Military education: DOD needs to develop performance goals and metrics for advanced distributed learning in professional military education* (Publication No. GAO-04-873), July 30, 2004.
- Vrazalic, L., Macgregor, R. C., Behl, D., & Fitzgerald, J. (2009). E-learning barriers in the United Arab Emirates: Preliminary results from an empirical investigation. *IBIMA Business Review*, 4 (1), 1-7.
- Warner, R. S., & Burton, G. J. S. (2017). *A fertile oasis: The current state of education in the UAE*. Mohammed Bin Rashid School of Government, Dubai. Retrieved on 26th of September 2020 from <https://www.mbrsg.ae/getattachment/658fdafb-673d-4864-9ce1-881aaccd08e2/A-Fertile-OASIS-The-current-state-of-Education-in.aspx>
- Yin, R. K. (2009). *Case study research: Design and methods* (4th ed.). Thousand Oaks, CA: Sage.
- Yin, R. K. (2013). *Case Study Research: Design and Methods*. 5th Edition, Sage, Thousand

Oaks. *SAGE Publications, Inc; Fifth Edition.*