The Application Of E-Learning Strategies In Palestinian Universities

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Abstract
The dynamism and complexity of the external environment of an organization requires interdependent decisions. Hence, this type of problem requires a means or tool that presents the results of multiple decisions in a simple and logical manner that facilitates the understanding and evaluation of alternatives and the selection of the best ones. Therefore, in this research, I used both the effect diagram and the decision tree models, because it is important to have a clear graphic representation that focuses on areas of uncertainty to represent the problem. Through this research, try to answer the following questions: What is the reality of the problem that we suffer from in Palestine? What is the role of decision analysis models and their philosophy in solving the decision problem? What is the logical relationship between decision analysis models in solving the problem?Initially, the effect diagram for the research decision problem was constructed to capture the various uncertainties, then it was moved to a decision tree. The decision tree is analyzed by reversing the direction of the drawing after its completion by finding the expected value for each alternative, comparing the values, choosing the best and placing them next to the final decision point. Based on these values, the best alternative was determined. The decision tree in the research helped exclude and delete the bad alternatives in order to reach the appropriate decision.The Palestinian government's decision to provide the Ministry of Education with an amount of money to invest in the education sector to introduce e-learning strategies as a standardized approved curriculum in universities. The Minister of Education formed a working group, in order to optimize the use of e-learning strategies in Palestine. What is required is to draw an effect chart and decision tree to clarify the best path to achieve material values in the application of optimal e-learning strategies and intangible values in preparing a technological society in which a generation of learners harness technological progress in education and achieve an accumulation of technically prepared human fortune. What is required here is to make a decision analysis of the problem and take the right decision,The Minister of Education (decision maker) clarifies the goal and grants facilities to obtain financial support for directors of education directorates to support an integrated work plan produced by the work team and agree to prepare, plan, evaluate and then implement it. The results obtained: Modernizing the infrastructure of the Internet at a high flow speed and providing the sources of devices, equipment and necessary subscriptions in proportion to the needs of teachers and learners and their material capabilities with the provision of technical and technical support and the use of an expert and the payment of 7 million dollars.

Key words: Effect Diagrams, Decision Tree, Decision Making, Distance Learning, E-learning, E-Learning Management Systems, E-Learning Center.

Introduction

The world is experiencing a revolution in the use of technology in the education sector, and education has invested this progress in classrooms in schools and universities, which led to the establishment of the so-called e-learning, which is the modern way of learning in record time and less effort.

It is the method of learning mentioned by Horton (Horton, 2003) as the way in which learning will occur in the twenty-first century. Where these contemporary changes represented by technological innovations imposed on educational institutions the necessity of gradual transformation and benefiting from the field of educational technology. In other words, technological progress has provided the teacher and the learner with new teaching and learning strategies, allowing them to interact independently and actively (Al-Yousef, 2018).

E-learning offers the latest technology in terms of devices and the use of the Internet, which provides multiple sites that include educational materials for all levels of education in an interesting educational environment. The learning is between the learner and the application or interaction between the learner and the teacher, which provides flexibility in teaching and the independence of the learner in learning.

The importance of e-learning in improving the quality of higher education and its development through improving teaching methods and techniques to match the general development of technology, and universities have become required to search for educational methods and models that contribute to the development and development of universities and help learners achieve educational goals with high skill and professionalism (Abdel Moneim, 2018) . Technology with its tools used in higher education systems is an essential axis in promoting competition between universities, and the use of distance education technology has achieved impressive successes, but to obtain the best results the need to ensure the use of a high-quality e-learning model that meets the requirements of learners (Bakr, 2019).

These developments coincided with the modern educational trends that pushed towards the use of e-learning strategies and the employment of educational technology in order to develop education in educational institutions and increase learning opportunities that keep pace with urgent changes and their positive impact on the achievement of the learner in the higher education stage. As a result, it became clear that the use of e-learning It provides better learning results than what led him to occupy a high position, and the need for him became urgent (Atir, 2015).

Decision-makers in the Palestinian Ministry of Education and Palestinian universities must improve its employment and integrating it into teaching methods, because this would raise the level of education.

Study problem

The tremendous development in the world of the Internet and the emergence of different generations of smart devices, social networking sites, live meeting applications such as Zoom and Microsoft Teams, and other learning platforms such as

Google Classroom, have had a tremendous impact on information and the increase in sources of access to it, which opened the field for e-learning that is concerned with providing educational content in addition to To the methods of providing information, supporting activities and assessment methods, which consequently imposed a new educational and educational reality on educational institutions. Which led to university institutions seeking to provide the requirements for e-learning as it is one of the important topics that must be taken care of because of its contributions to the educational process and its ability to transcend time and place restrictions, take into account individual differences between learners, and contribute to increasing student achievement and its ability to deliver The content and activities of educational programs via the Internet using e-learning strategies that suit the capabilities of learners and help them achieve educational goals with high skill and professionalism (Al-Yousef 2018). Globalization and the knowledge economy leading to sustainable global development (Scott, 2013). It is considered a means of communication that enables teachers to communicate with their students and with experts in the field of education, which benefits the educational process as a whole. Rather, it constitutes a large part of the income of some universities. Therefore, governments should support e-learning, taking into account the challenges they will face (Hamayel, 2018).

In line with the special situation in which we live in Palestine from the possibility of crises calling on the Palestinian government to close educational institutions, either for security reasons related to the Israeli occupation or the occurrence of environmental crises such as the Corona pandemic or natural disasters due to weather conditions, educational institutions started through self-initiatives from a group of teachers to use Various electronic programs for education and access to students without coordination with the ministry or education directorates, which created a state of confusion. The Palestinian government in 2017, in cooperation with the Ministry of Education and Higher Education, issued a decision to digitize education at a cost of 24 million dollars (Ministry of Education and Higher Education, 2017) and this experiment was not successful because the reforms were linked to the personality of the minister and not to a systematic national agenda that was wasted and faded by changing the minister.

With the emergence of the Corona pandemic, the need to use distance learning returned, but the researcher is a teacher in the educational field and has practical experience in training teachers to use technology in education at the Center for Continuing Education at Birzeit University, and she has a direct relationship with the Ministry of Education and its contact with the School Parents Committee, showed Distance education is a weakness from which the educational process suffers from the lack of experience of teachers in using modern technologies, the weak infrastructure of the Internet, the lack of necessary technological and technical devices, and the lack of student turnout, especially school students. The various initiatives adopted by the Ministry of Education to implement e-learning strategies seem to have a low impact, as evidenced by the absence of real practices for these initiatives. We find that they were jurisprudence that did not take into account that this education, which needs to develop policies and effective leadership, through the nature of my work is not

available in the field to establish For higher policies and guidelines that lead to this change in a systematic way, it is clear that there is a lack of policies. Also, through the meeting with the parents' committees, we find that the suffering of the parents of the learners is reflected in the provision of the necessary technological and technical devices, the costs of purchasing and maintaining them, and the subscription fees for the Internet at an appropriate speed of access to run the various applications and the consequent preparation of the appropriate Internet infrastructure. Through my direct contact with teachers, I felt the need to pay attention to training students on the elements and various methods of e-learning, and to train and prepare teachers and qualify them. I can summarize the most importantChallenges faced by the application of e-learning strategies in Palestine:

1 - Non-institutionalization of policies that sponsor the application of e-learning in Palestine, as the jurisprudence was in setting procedures and not in drawing clear policies that guide and lead the procedures.

2 - The lack of the necessary number of technical devices and equipment and the availability of technical support.

3 - The increasing number of learners and the need to train them to use programs and applications.

4 - The need to train teachers to manage and activate e-learning systems, programs and applications.

5 - Operational costs of the e-learning system.

6 - The need to prepare an Internet infrastructure that must be of high flow, to ensure the speed of downloading curricula and applications and exchanging data in interactive education, and the power outage crisis during the period of rationalizing its use affects the operation of the routers, which disconnects the Internet connection.

7 - Adopting evaluation mechanisms through virtual exams, which is one of the most difficult challenges we face during the application of e-learning strategies.

8 - Financial fatigue for the Palestinian family to bear the costs of Internet subscription and the purchase of computers in light of the deteriorating economic situation.

This study came to examine the reasons for the ineffectiveness of e-learning strategies in educational institutions in Palestine. The problem of the study is embodied in finding and working an optimal e-learning system in Palestine that faces the challenges mentioned previously. The problem of the study emanates from the following questions:

The first question: What is the reality of the problem of applying e-learning strategies that we suffer from in Palestine?

The second question: What is the role of decision analysis models and their philosophy in solving the decision problem?

The third question: What is the logical relationship between the decision analysis models in solving the problem?

Project Idea and Expected Value

To keep pace with the developments and revolution of information technology and the rapid changes and challenges, the integration of technology in the educational process

has become a global trend, because of its impact on improving the quality of education and in facing crises by providing plans and strategies to maintain the continuity of the work of the education sector, which constitutes the safety valve for the continuation of society's march towards the future successfully. The Palestinian government decided to provide the Palestinian Ministry of Education with an amount of money to invest in creating and operating an e-learning system in Palestine that provides optimal e-learning. The Minister of Education gathered a working team consisting of directors of education directorates, academic educational researchers and e-learning specialists from the ministry and various Palestinian universities, experts and specialists in the field of information and communication technology and in the field of designing computerized educational materials, to discuss the challenges and steps to be followed in order to create e-learning Active in Palestine. It is required to draw an impact diagram that shows the best path to achieve material values in building and creating e-learning optimum and moral value in preparing a technological society in which a generation of learners harness technological progress in education and achieve an accumulation of technically prepared human capital that forms the pillar and essence of development. The Minister of Education (the decision maker) clarifies the goal and grants facilities for obtaining financial support to the directors of education directorates to support an integrated action plan produced by the work team and they agree to prepare, plan, evaluate and then implement it. What is required here is to make a decision analysis of the problem.

The value desired by the Palestinian Ministry of Education is a material value. Finding optimal e-learning in Palestine gives teachers and learners electronic skills to deal with technologies and a moral value through students' appreciation of the importance of technology and its uses in the field of teaching and learning and the value of self-learning.

Research objectives

The decision-making process follows a scientific and practical method for linking the goals and the means used to achieve them, and drawing the parameters of the path that defines all decisions, and how to implement them, and therefore it is an organized and conscious process to choose the best alternatives and prioritize within the limits of human and material capabilities. This research comes to clarify the method used in the decision analysis process, which is the use of the effect diagram and the decision tree. Hence, the research objectives are:

1 - Studying the reality of e-learning in educational institutions in Palestine.

2 - The role of decision analysis models from the impact diagram and decision tree to analyze the positive decision of the ministry to obtain the material and synergistic values of e-learning.

3 - The logical relationship between the decision analysis models from the impact diagram and the decision tree to come up with a final recommendation for the decision maker.

Importance of Draft Decision Problem

The study derives its importance from the following:

1 - The researcher desires to do the research, which is to apply the optimal e-learning strategies using scientific methodology and tools, which are the decision analysis models from the impact diagram and the decision tree to reach scientific results, to help the decision maker reach the appropriate decision.

2 - The scarcity of studies in this field in Palestine, as this study is recent and enriches the theoretical literature and may be a knowledge base for later studies.

3 - It highlights the use of decision analysis models in educational research.

4 - It is hoped that the educational literature will enrich the development of educational institutions by using decision analysis models.

5 - The study may be an important scientific addition and a general framework for many researchers who will deal with the same topic.

6 - He hopes to reach recommendations that contribute to the development of optimal e-learning.

7 - Directing the attention of decision makers to the importance of adopting decision analysis models and impact charts, as they help improve the level of decision-making.

Work mechanisms and team formation

The decision analysis comes to provide us with comprehensive means of evaluation by first controlling the value and then controlling the problems in order to choose the best course of action based on a clear and accurate understanding of the value proposition and the risks emanating from each path, which is as far from the problem as possible in order to ensure the material or moral consequences of the future.

complainFor team work

1 - Determining several sessions for brainstorming as a way to obtain options and alternatives that maximize value through the largest possible number of ideas through the team (a working team consisting of directors of education directorates, academic researchers, educationalists, e-learning specialists from the Ministry and from various Palestinian universities, experts and specialists In the field of information and communication technology, in the field of designing computerized educational materials, and in the field of finance and accounting) chosen by the decision-maker (the Minister of Education).

2 - Determine the course of action to solve the problem

In order for the team of experts to create a common understanding among themselves and discuss the problems identified in the impact diagram and explain and diagnose them in a complete detailed manner so that the problem is fragmented into an integral part to be able to make a decision in a way that achieves the desired value, which is to find an optimal e-learning, the following problems were put forward for discussion with Panel of Experts Among the questions that crystallized around it:

For the first problem: the lack of institutionalization of policies that sponsor the application of e-learning in Palestine, the jurisprudence was in the development of procedures and not in drawing clear policies that guide and lead the procedures, the questions that were raised by the team:

1- Is there political support and the development of regulations, legislation, regulations and funding that support the application of e-learning strategies in Palestinian universities? If found, what is it?

2 - What is the strategic plan for e-learning that aligns with the plan of the Palestinian Ministry of Education?

3 - How do we see e-learning in Palestine after 5 years

The second problem: the lack of the necessary number of technical devices and equipment and the availability of technical support, the questions asked by the team:

1 - Do we have computers and internet connection subscription facilities for each teacher and student?

2 - What is the technical and technical support mechanism that can be obtained by learners and teachers?

The third problem: the increasing number of learners and the need to train them to use programs and applications. Questions posed by the team:

1 - Are the learners ready to use the e-learning platform?

2 - What are the necessary programs to prepare the learner in the use of technologies and e-learning skill?

3 - How many students own computers and have an internet subscription?

4 - How many smart devices and internet subscriptions do I need to provide? Where will we get funding to support students?

5 - How many learners would benefit from each possibility

The fourth problem: the need to train teachers to manage and activate e-learning systems, programs and applications. Questions raised by the team:

1 - Are teachers ready to use the e-learning platform?

2 - What are the qualification courses needed to prepare teachers to teach using e-learning strategies?

3- How has the application of e-learning strategies changed the role and responsibility of the teacher?

4 - How many teachers own computers and have an Internet subscription?

5 - How many smart devices and internet subscriptions do I need to provide? Where will we get funding to support teachers?

6 - Are teachers ready to use the e-learning platform?

7 - How many teachers benefit from each possibility?

The fifth problem: the need to prepare an Internet infrastructure that must have a high flow, to ensure the speed of downloading curricula and applications and exchanging data in interactive education, the questions posed by the team:

1 - What is the structure of the internet infrastructure needed to implement e-learning strategies?

2 - What is the role of PALTEL telecommunications company in creating special packages for subscribing to the fast internet service in support of the e-learning process in Palestine? What is the direction of wireless carriers in this regard?

3 - What is the plan of the companies that supply technical equipment and devices to provide technical support to students around the clock?

The sixth problem: Adopting evaluation mechanisms through virtual exams, and it is considered one of the most difficult challenges we face during the implementation of e-learning strategies. The questions asked by the team:

1 - What are the evaluation mechanisms used in e-learning systems?

2 - What are the appropriate types of e-assessment when applying e-learning strategies in Palestinian universities?

3 - How efficient and credible are the electronic assessment mechanisms that Palestinian universities will adopt?

4 - What are the quality standards for electronic evaluation mechanisms?

The seventh problem: Financial exhaustion for the Palestinian family to bear the costs of subscribing to the Internet and purchasing computers in light of the deteriorating economic situation. Questions posed by the team:

1 - What is the income level of the Palestinian family?

2 - What are the sources of support and funding for poor families to provide them with computers and Internet subscriptions?

3 - What is the availability of technical and technical support

The business team then chooses the course of action that delivers the best value. After discussing and analyzing the problems, the work team of experts and specialists arranged them according to the priorities of their impact as an obstacle to the application of optimal e-learning strategies in Palestinian educational institutions, in descending order from the most difficult to the easiest, as follows:

1 - Non-institutionalization of policies that sponsor the application of e-learning in Palestine, as the jurisprudence was in setting procedures and not in drawing clear policies that guide and lead the procedures.

2 - Adopting evaluation mechanisms through virtual exams, which is one of the most difficult challenges we face during the application of e-learning strategies.

3 - The need to prepare an Internet infrastructure that must be of high flow, to ensure the speed of downloading curricula and applications and exchanging data in interactive education, and the power outage crisis during the period of rationalizing its use affects the operation of routers, which disconnects the Internet connection.

4 - The need to train teachers to manage and activate e-learning systems, programs and applications.

5 - Operational costs of the education system.

6 - The increasing number of learners and the need to train them to use programs and applications.

7 - Financial fatigue for the Palestinian family to bear the costs of Internet subscription and the purchase of computers in light of the deteriorating economic situation.

8 - The lack of the necessary number of technical devices and equipment and the availability of technical support.

The team of experts recommended the analysis of problem areas: administrative work, training work, installations and equipment. Then the following results were obtained:

Administrative work (institutionalizing policies that sponsor the application of e-learning, adopting evaluation mechanisms through virtual exams): achieving material and moral value.

Training work (training learners to use e-learning applications and technologies, qualifying teachers to activate e-learning applications and technologies): achieving material and moral value.

Devices and equipment (computers, setting up an Internet infrastructure, technical support): achieving material and moral value.

Draft terminology

Impact diagrams: Impact diagrams are a specific type of probabilistic graphical model that contains opportunity, decision, and value, through which a decision-making problem can be analyzed under uncertainty and that it provides a method for balancing cost-benefit and solution preferences and is a new intellectual tool that can facilitate the formulation and evaluation of decision problems. (Lieder, Griffiths, & Hsu, 2018).

Decision tree: Decision tree is a well-known method for generating patterns and making predictions using an illustration of the decisions and their expected consequences, and to determine the path in the decision-making by placing all the possible possibilities and the outcome of each possibility, the initial decision is placed in a rectangle from which several lines representing the possibilities branch. This tool allows managers to understand the potential outcomes of each decision and choose the optimal option (Shaheen, Zafar, & Ali, 2020).

Decision-making: an organized mental process, which includes identifying the desired problem, then researching and scrutinizing the available solutions, comparing and weighing between solutions (alternatives), and then arriving at a decision (Ali, 2017).

Distance learning: It is a method of education without direct contact between the teacher and the learner and the use of various technologies from employing modern technological media in education to facilitate communication between them. It is based on the concept of self-learning, and distance learning has become a constant part of the world of education, with trends indicating continued growth (Zuhairi, Karthikeyan, & Priyadarshana, 2019).

E-learning: E-learning is the most common technological model to support the constructivist approach that focuses on the student as the focus of the educational process, and includes training or education programs by electronic means using computers or smart electronic devices linked to the Internet. It provides an interactive multi-resource learning environment in a synchronous or asynchronous manner based on self-learning and learner-teacher interaction (Mesfin, Ghinea, Grønli & Hwang, 2018).

E-Learning Management Systems (LCMS): It is the developed generation of LMS learning management systems because it allows teachers to participate in the creation, storage, use and reuse of educational content units, and this system can control the academic content. Most content management systems include digital learning units, learner data and its management, learning plans, the ability to conduct tests for learners and their assessment, and the ability to communicate between learners through e-mail and discussion forums. An e-learning management system can be open source, obtaining the system for free from the Internet and the ability to develop and modify it such as MOODLE, or closed source of a company and obtaining it for a fee such as Blackboard (Brenda, Juan, Juvenal, Andrés & Raúl, 2018).

E-Learning Center: It is a center that includes software design and e-learning strategies, updating the infrastructure of the Internet through cooperation between the technology and communications sector and scientific research centers, in which quality is achieved in the educational process by preparing qualified teachers who have the ability to use modern technologies in education, developing Educational institutions and their upgrading to introduce modern education programs (Abdel Moneim, Samia, 2018).

Search Parameters

The study is defined by the following limits:

1 - Boundaries of the topic: The study was limited to the application of e-learning strategies in Palestinian universities.

2 - Spatial and temporal limits: The study tool will be applied to Palestinian universities during the summer semester of the academic year 2019/2020.

3 - Conceptual Domain: The search terms are defined and clarified

Study limitations: the short period of time in the summer semester to conduct research, the circumstances of the university closure due to the Corona pandemic, and the inability to visit the library and obtain books and distance learning that does not replace face-to-face meetings.

Research rationale

The justifications for choosing the topic of the research go back to the emergence of the Corona pandemic crisis and the resulting confusion and confusion that befell educational institutions in the use of electronic learning methods. An abundance of electronic devices. Here the importance of the decision-making analysis method for officials to find the best solutions and alternatives required to activate the use of optimal e-learning strategies that meet the needs of learners.

Previous studies

Bae (2014) has conducted research on the use of decision trees in clinical decision analysis to overcome complexity and uncertainty in medical problems, to allow decision makers to apply evidence-based medicine to make objective clinical decisions when faced with complex situations. This simple prediction model has provided clinicians with a practical tool for dividing patients in the emergency department.

And in a study (Al-Bilbisi, 2016) entitled “How to develop methods of decision-making in managing security crises inPalestine, this study discusses the methods of developing security decision-making, and other clear security repercussions in the crisis management processes facing the Ministry of Interior and National Security, identifying a set of modern methods in making security decisions, and identifying the most important obstacles that hinder the process of developing the methods used In making the security decision in the ministry. The researcher used the descriptive analytical method, and applied the questionnaire as a main tool for data collection, the total size of the study community, which numbered (1556) employees, and the study sample took its pilgrimage (147) employees who were chosen by the random sampling method.

In (Ping Sung, 2016) he conducted a study on the importance of web design in tourism organizations as one of the main factors in maintaining a successful travel business, meeting the changing needs of consumers while producing an effective website. This study uses a new technology and tool, the decision tree and Weka platform, that identifies important attributes that influence the quality levels of a customer's experience when visiting a travel agency website. The study produced decision trees via the Weka platform. This study confirms previous research and indicates that decision trees and Weka are applicable techniques in evaluating travel agency websites and promotional materials.

In a study (Rautenberg et al., 2020) it aimed to study health economics, which is one of the branches of economics applied to health care. One method used in health economics is decision tree modeling, which extrapolates the cost and effectiveness of competing interventions over time. Decision tree models are the basis for reimbursement decisions in countries using health technology assessment for decision-making. In many cases, these competing interventions are diagnostic techniques. This paper is of interest to designers developing diagnostic decision trees for the first time and decision makers who review diagnostic payment models.

Commenting on previous studies

This study agrees with previous studies, as it looks at the use of the two models of decision analysis from the impact diagram and decision tree in the decision-making process. Education, specifically universities, where all previous studies were conducted in health, security and tourism institutions.

Draft Tools

The two research tools for decision analysis are the effect diagram and the decision tree.

Stability and validity

To measure stability: study previous research and studies on the subject of decision analysis and its tools from the effect diagram and decision tree, re-analyzing again after a month and calculating the Cronbach alpha coefficient.

To measure validity: Re-analysis to determine the extent to which the steps are measured for the goals and objectives of the study.

Solution method for decision problem

Using problem solving steps, using an effect diagram, and a decision tree.

Evaluation Criteria

The use of technology contributes to increasing student achievement and its ability to communicate the content and activities of educational programs via the Internet in a manner that is commensurate with the capabilities of learners.

Preparing a technological society in which a generation of learners appreciate the value of technological progress in education and the accumulation of technically prepared human capital that forms the pillar and essence of development.

The results of the draft resolution problem, and its discussion

The first question: What is the reality of the problem that we suffer from in Palestine?

The educational administration in Palestinian universities is witnessing problems and challenges that include the student, the teacher, and the curriculum that does not fit the era of globalization and technology, and therefore needs radical solutions to address them, and since educational reforms need a relatively long period of time, we realize that we are facing a real crisis (Abdel Moneim, 2018). Despite the efforts made by the Palestinian Ministry of Education to develop e-learning, educational practices have not changed as required, and the e-learning process still suffers from a clear weakness in the technology infrastructure, especially in the provision of computers and weak Internet networks, and e-learning outcomes do not achieve The required goals and this is due to the weak ability and efficiency of teachers to use electronic resources correctly and the students' weak ability to use e-learning programs and applications, in addition to technical problems from the high cost of devices, tools, networks and equipment accompanying the infrastructure for the processing of e-learning, as well as the cost of following up on its continuous development and maintenance (Hamail, 2018)?

The second question: What is the role of decision analysis models and their philosophy in solving the decision problem?

The Minister of Education (the decision maker) is to clarify and explain the goal, and grant material payments to obtain the material and moral value from the work team, experts and specialists. It is required to make a decision analysis of the problem through the steps of the impact diagram:

1 - Explanation of the objective

The Minister of Education (the decision maker) explains the goal of investing (1 billion dollars) in a project of two material and moral values to the work team.

Defining the problem: The working team consisting of directors of education directorates, academic educational researchers, e-learning specialists from the ministry and various Palestinian universities, experts and specialists in the field of information and communication technology, in the field of designing computerized educational materials and the field of finance and accounting, are collaborating to determine the mechanisms of investment of 1 billion dollars. By answering the following question: How can the allocated amount be invested for the project? (To update the infrastructure of the Internet, to provide devices and equipment for e-learning, to provide technical and technical support centers, e-learning centers to train teachers and learners, and to develop policies for the e-assessment mechanism). The options came to implement the optimal e-learning strategies in Palestine. We need administrative work, devices and equipment, and training work with me).

Determining educational goals is of great importance in drawing up the project's strategy, and the means cannot be separated from the goals, as they all work in one framework. By administrative work, I mean the establishment of the government in partnership with the Palestinian Ministry of Education, policies that sponsor the application of e-learning, the adoption of assessment mechanisms through virtual exams, devices and equipment such as computers, a high-speed internet infrastructure, and every method that matches the goal. Planning and organizing the use of all

learning resources available to us, including means of communication and technology. I also mean by training work, training learners to use programs and e-learning applications, and training teachers to manage and activate e-learning systems, programs and applications, and choosing the most appropriate from a practical point of view to achieve the desired educational goals with a high level of education. the performance.

Putting questions about this problem: Is the educational return equal to what is spent on it? What are the best educational means to achieve educational goals? How can the obstacles to the application of e-learning strategies be overcome? What type of electronic educational methods are appropriate to achieve these goals?

2 - Determining the value to be achieved because we view education using technology as a strength and an area of investment aimed at developing the workforce and human resources sources in society in various fields. Despite the difficulty of evaluating the return on education in general, given that the return appears after many years, here in this research the required net value will be determined, in this case two values (material and moral).

3 - Analysis of problem areas: administrative work, training work, equipment and supplies. Then the following results were obtained:

Administrative work (institutionalizing policies that sponsor the application of e-learning, adopting evaluation mechanisms through virtual exams): achieving material and moral value.

Training work (e-learning center is concerned with training learners and teachers to use and activate e-learning programs and applications): achieve material and moral value.

Devices and equipment (internet infrastructure, smart phones, computers, frequent power outages): material and moral value are achieved.

4 - Determining the problem areas for the options that have been selected in detail and dividing them into parts, according to the Malaysian experience (Abdul Moneim, 2018) and Japanese (Bakr, 2019). I see that the most important advanced strategies that have an impact on the development and integration of technology in education and the upgrading of educational institutions in these countries It is the ones that have been approved by e-learning centers for training, the adoption of electronic evaluation mechanisms and the modernization of the Internet infrastructure, so the rest of the options that were previously presented were excluded.

5 - In light of the above, the three options have been retained: administrative work (virtual evaluation mechanisms), training work (e-learning center for training), and devices and equipment (internet infrastructure).

The two problem areas related to the proposed values were approved, and work was done to identify the problem areas for each of them. For the hardware and equipment option, (problem site 1) to update the Internet infrastructure emerged from it two problem areas (using an expert, not using an expert) and then a set of questions were asked : Is there a competent expert to update the infrastructure of the Internet? Can we provide fast, competitively priced communication for each student and teacher? What

are the ways to improve internet service in the learning and teaching process? Is it possible to provide a communication device and a router for each student?

As for the training work option, (problem site 2) using teacher training (synchronous/asynchronous) emerged from it two problem areas (using an expert, not using an expert), and then a set of questions were asked: What is the type of training for the appropriate teacher to be responsible for offering taught courses? e-learning method? Does it enhance communication between students? What are the obstacles to using it? What program, application or portal will be approved? What are the appropriate training programs to qualify learners to use e-learning applications? Does it improve the performance and achievement skills of students? Does it improve students' skills? motivation? Can it be used inside and outside the classroom?

As for the administrative work option, it emerged (problem site 3) using an e-learning center that sets default evaluation policies, from which two problem areas emerged (renting a building, building a building), then two problem areas branched out (city, village), then branched out two problem areas (using an expert, not using an expert).) A set of questions were asked: What type of experts and specialists (from researchers, educators, academics, specialists in building approved electronic assessment mechanisms, technology and communications, and experts in the field of their application) to be responsible for managing the center's departments? Is it possible to rent a prefabricated building that meets the need or build a building according to specific specifications? How many floors do we need and what is the area and number of departments and rooms? What tools, fixtures and equipment are needed to be available in the center? Does this center enhance the goal of leading the development of policies for the development of evaluation mechanisms and the application of electronic in Palestine? Does an increase in the return on continuous capital in educational technology require a parallel program of research to study the role of communication and technology in reducing education expenses and increasing the return from it? Does it improve the dissemination of education, raise the level of achievement and performance of students, or increase the efficiency of the educational return? What are the obstacles to its application? Is it possible to provide the required devices and equipment in the center? What goals can be better achieved using the e-learning center? What kind of scientific research do we need to develop educational technology? What types of training does the center need to provide to support the cadre of academic lecturers?

Each problem site is fragmented into the smallest part, meaning the fragmentation of the maximal fragment, and the identification of the important task

Locate and delete the unimportant task.

Impact Chart for the Project "Implementing E-Learning Strategies in Palestinian Universities". The presentation of the seven problems is arranged according to the justifications of experts discussed earlier

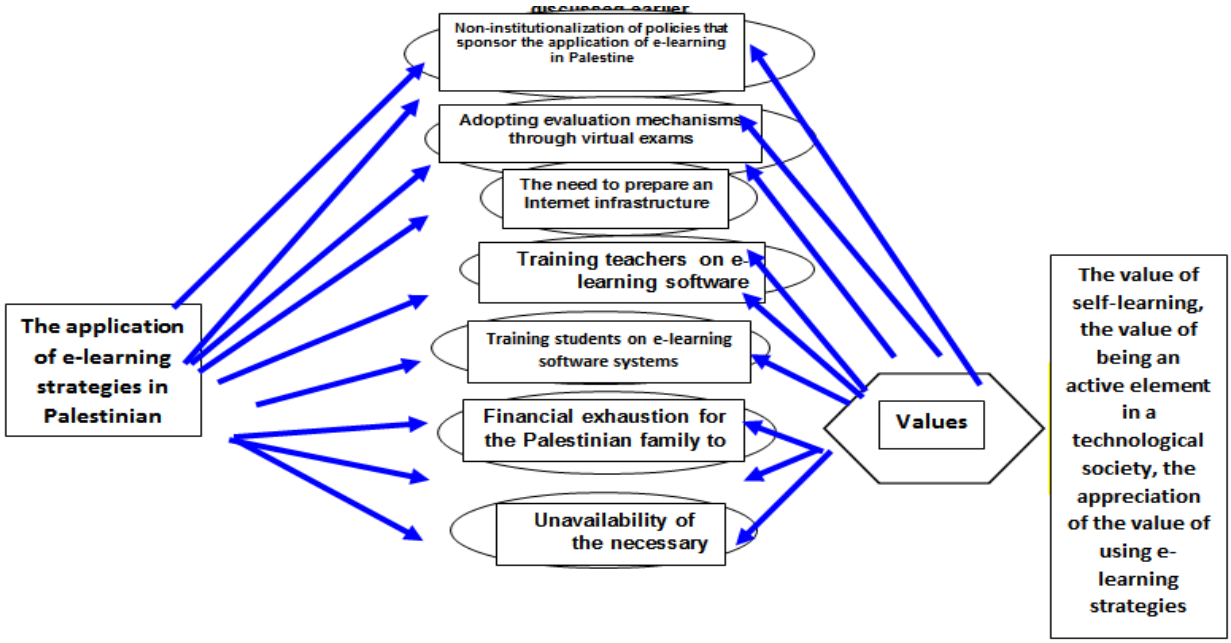
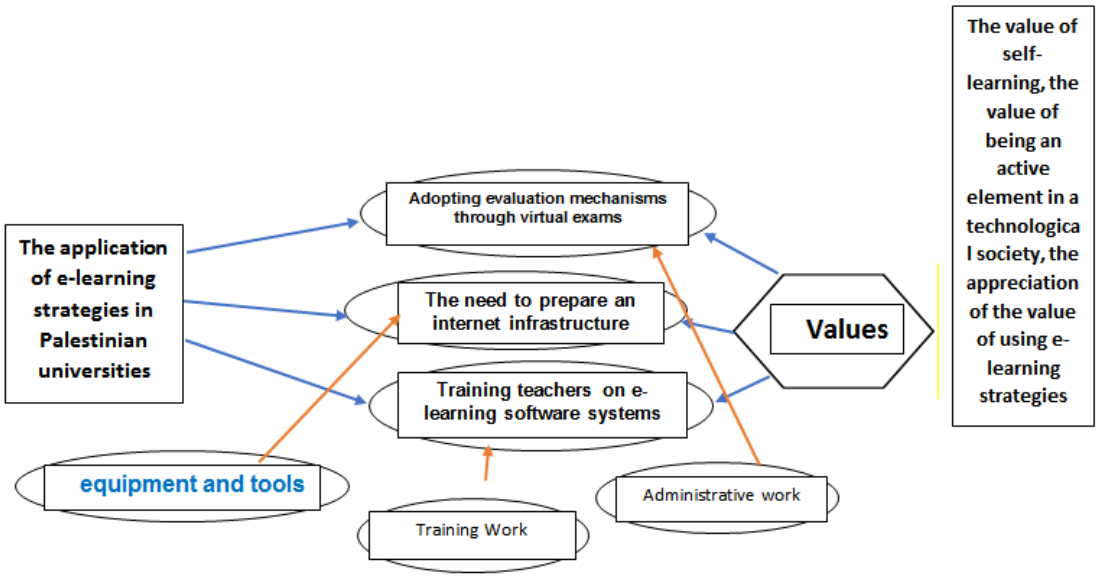


Figure 1: Effect Diagram

According to the Malaysian experience (Abdel-Moneim, 2018) and Japanese (Bakr, 2019), the team of experts found that the three most important problems are the three options: administrative work (virtual evaluation mechanisms), training work (e-learning center for training), and hardware and equipment (internet infrastructure). Therefore, the effect diagram becomes



Determining the desired decision, and the problem locus chosen from the impact chart:

1 - Based on the impact plan, the decision was determined to invest an amount of (1 billion dollars), and through experts and specialists, three problem areas were identified: The first problem is devices and equipment, and the option to update the Internet infrastructure was launched from it, and two problem areas (expert use or non-use) were launched from it. The second problem area is the training work, from

which the option of training teachers and learners to use e-learning programs and applications was launched, from which two problem areas (using an expert, or not using an expert) were launched. A problem (renting a building, or building a new building) and then branching out into several branches according to the shape of the decision tree - Figure (2-1), Figure (2-2) and Figure (2-3).

2 -Building a structure for the decision tree: A structure for the decision tree is built, through which the chronological order of decisions is determined according to their sequence, the problem areas in them, and the branches emanating from them, and according to the decision (the application of e-learning strategies in Palestinian universities) it is placed in a box to the left of the paper, Followed by three problem areas related to each of them (administrative work (e-learning center), training work (training teachers and learners on e-learning), devices and equipment (internet infrastructure), (they are placed within problem circles / nodes) and each area is followed by two problem areas Two subcategories related to each of them (the use of an expert or not the use of an expert, renting a building or building a building, the place of a village or city), as well (placed within circles).

3 - Building the complete tree in Figure (2-1), Figure (2-2) and Figure (2-3) with all options and alternatives. Where the triangle represents the output value, the circle represents the problem areas, and the square represents the decision that was taken.

4 - Reviewing the designed tree: The process of reviewing the built tree is to ensure that all the required data and information are present, the main problem areas, and those subordinate to it.

Decision making Flip the tree method allows to reduce problems, analyze a complex decision problem as a series of small decision problems, and provide sensitivity and probability analysis.

1 - Start by solving the tree from right to left (Rolling Back), to calculate the expected values.

2 - Calculation of the expected values: The solution is according to a mathematical equation through which the total sum of the probability of each output, value or path multiplied by its percentage, with the need to take into account the mathematical signs (plus and minus). We start with the process of calculating the value of each possibility from left to right in order to make the optimal decision**.**

Problem Location (R11): (Devices and Equipment: Internet Infrastructure) The decision maker has two options, either to use the expert and bear the costs of 10 million dollars annually, or not to use it and bear the costs of 7 million dollars annually, and therefore the logical option is not to use the expert because it is less **.**expensive

Location of the problem (R1): If he decides to upgrade the internet infrastructure, there is a 90% chance that it will be in excellent condition and will incur costs of $8 million annually, and a 10% probability that it will be inaccurate and annual costs : equal to $2 million, we apply the expected value method in this problem

EMV(R1) = -8,000,000×90% -2,000,000 .10% = -7,000,000

Meaning that the expected value of all branches of this node is equivalent to -7,000,000 dollars annually**.**

Problem site (R22): (Training work: training teachers to use e-learning applications) The decision maker has two options, either to use the expert and bear the costs of 10 million dollars annually, or not to use it and bear the costs of 6 million dollars annually, and therefore the logical option is not to use it as it is less expensive.

Location of the problem (R2): In the event of a decision to train teachers and learners on e-learning applications, there is a 70% probability that the training programs and ready-made e-learning applications will suit the specificity of our education and will bear the costs of 13 million dollars annually and a 30% probability that they are inappropriate and need modifications from specialists The annual costs are equal to 7 million dollars, we apply this node the expected value method.

EMV (R2) = -13,000,000 x 70% - 7,000,000 x 30% = -11,200,000

Meaning that the expected value of all branches of this node is -11,200,000 dollars annually.

The location of the problem (R3111): (Administrative work: electronic evaluation mechanisms through the E-Learning Center) The decision maker has two options, to manage the building in the city, either to use the expert and bear the costs of 10 million dollars annually or not to use it and bear the costs of 15 million dollars annually because it will be the employee's salary High and therefore will decide the logical choice using the expert.

Problem site (R3121): (Administrative work: electronic evaluation mechanisms through the E-Learning Center) The decision maker has two options, to manage the building in the village, either to use the expert and bear the costs of $7 million annually or not to use it and bear the costs of $11 million annually because it will be the employee's salary High and therefore will decide the logical choice using the expert.

Problem site (R311): (Administrative work: electronic evaluation mechanisms through the e-learning center) If an e-learning center decides in the city, there is an 80% probability that its services will be excellent, and it will bear the costs of $20 million annually, and a 20% probability that its services will be Inaccurate and annual costs equal to 10 million dollars.

EMV (R311) = -20,000,000 x 80% -10,000,000 x 20% = -18,000,000

Meaning that the expected value of all branches of this node is equivalent to $18 million annually.

Location of the problem (R312): (Administrative work: e-assessment mechanisms through the e-learning center) If an e-learning center decides in the village, there is a 60% chance that its services will be excellent, and it will bear the costs of $12 million annually, and onehope his services are inaccurate and 40 have annual costs of $18 million.

EMV (R312) = -12,000,000 x 60% -18,000,000 x 40% = -14,400,000

Meaning that the expected value of all branches of this node is equivalent to 14,400,000 million dollars annually.

Location of the problem (R31): In the event that he decides to establish policies for e-assessment mechanisms through the e-learning center through the e-learning center, the decision maker has two options, either renting a building in the city that costs 4

million dollars annually or renting in a village that costs one million dollars annually. The logical and least expensive decision is to rent in the village

The location of the problem (R32): In the event that the administrative work decides: e-assessment mechanisms through the e-learning center, the decision maker has two options, either building a building in the city that costs $20 million or building in the village that costs $10 million. The logical and least expensive decision is to build in the village.

Problem site (R3): (Administrative work: electronic evaluation mechanisms through the E-Learning Center) The decision maker has two options, either renting a building and bearing costs of $5 million annually and branching from it, or building a new building and bearing costs of $20 million and branching from it. The logical decision is to rent a building because the cost is much lower.

The decision maker has three options

1 - Updating the Internet infrastructure with a high flow speed that suits e-learning .and the number of users, and bears an expected cost of -7,000,000 dollars annually

2 - Using training programs to qualify learners and teachers to use e-learning applications, the expected cost is -11,200,000 dollars annually.

3 - Institutionalizing policies for the e-assessment mechanism through an e-learning center with an expected value of -14,400,000 dollars annually. Renting a building for the e-learning center in the village as indicated in the decision tree, and choosing to use it if the services it provides are not of high quality, and in the event of high quality services, there are no other options.

Thus, the logical, rational, and least expensive choice would be to update the Internet infrastructure with a high flow speed that is suitable for e-learning and bears an 7000000 dollars annually-expected cost of its value

Figure (2_1) Decision Tree: The first problem is Hardware and Equipment (Internet Infrastructure)

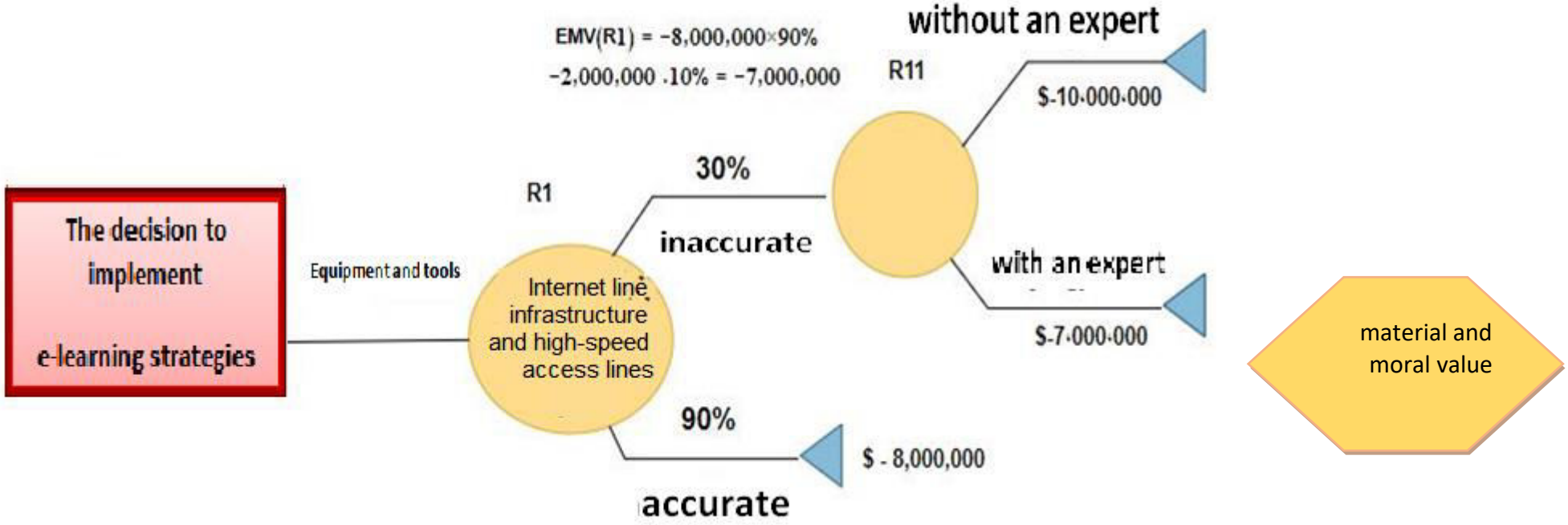


Figure (2_2) Decision tree: The second problem Training work: Teacher training

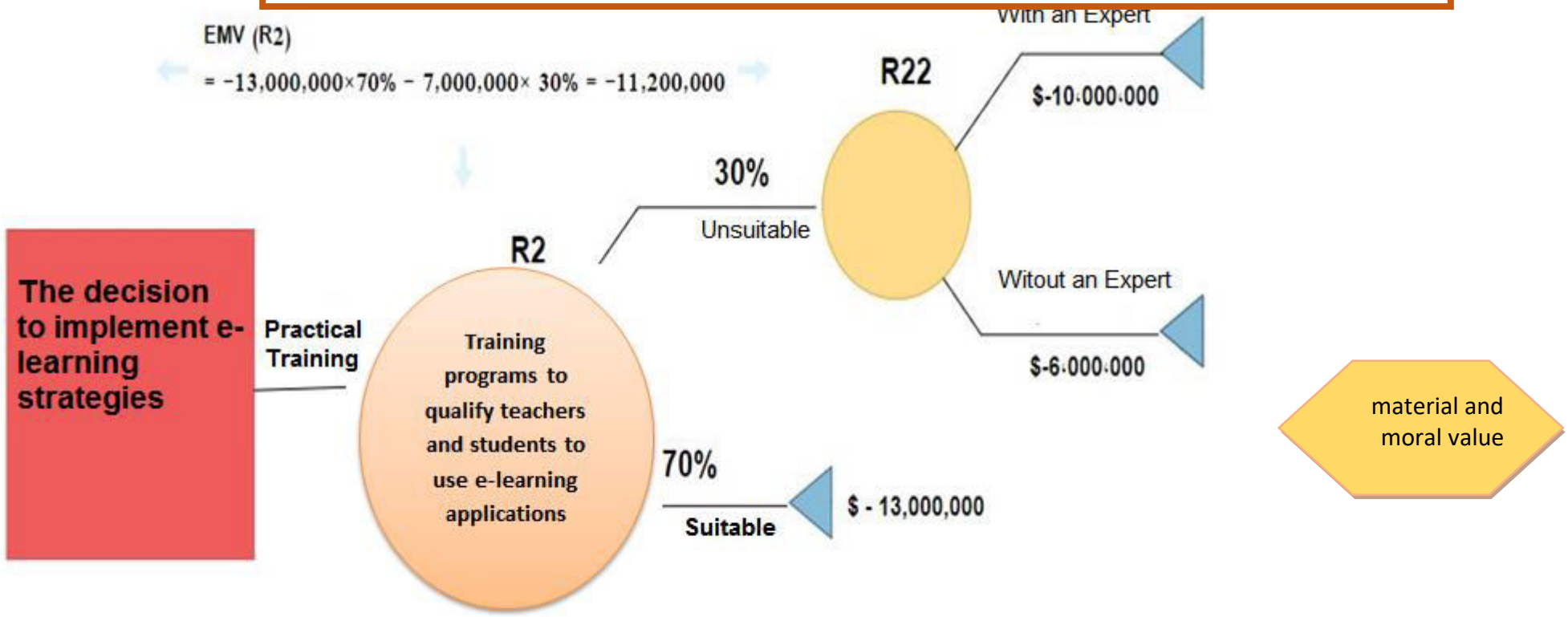
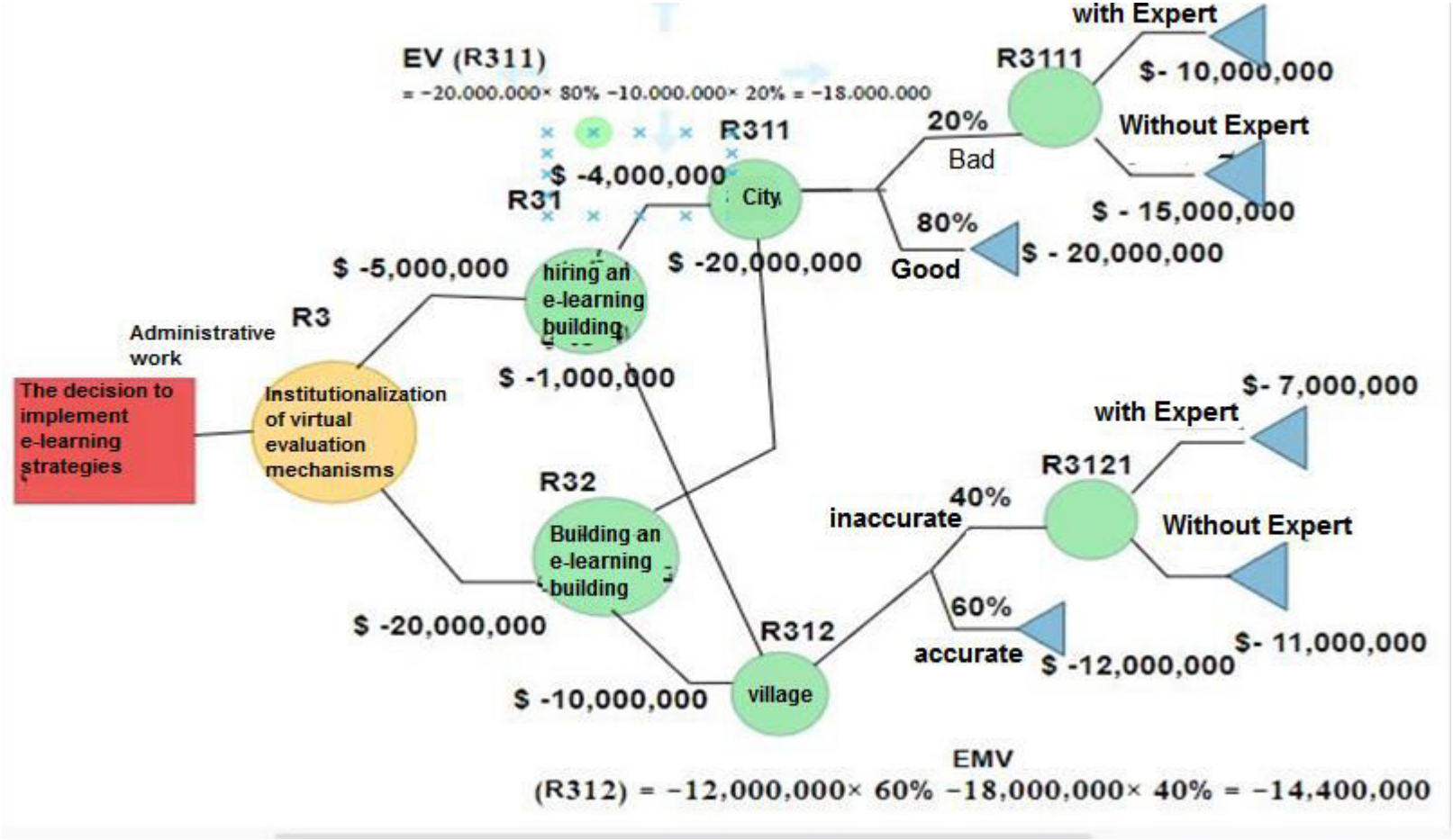


Figure (2_3) Decision Tree: The third problem is the institutionalization of hypothetical evaluation mechanisms



material and moral value

NPV Calculation

The net present value of the cash flows over a 10-year period of the project is calculated in Table (1), by calculating the costs (negative cash flows) and profits for each investment period, to find the present value of the flow of payments in the future, it is a useful tool to determine whether The investment will result in a profit or a loss. We want to invest $20 million in the project "Implementing E-Learning Strategies in Palestinian Universities" and according to the decision analysis of the project, it was decided to establish an Internet network structure at a cost of $7 million. Here we will calculate the net present value. If the net present value is positive, it results in profits while the negative value results Loss.

Table (1): A table of calculating the net present value of the project over 10 years

Discount rate	**0.1**	**Investment amount**	**7,000,000$**
the years	**discount factor**	**cash flow**	
1	**0.91**	**$300,000**	**$272,727.27**
2	**0.83**	**$500,000**	**$413,223.14**
3	**0.75**	**$1,000,000**	**$751,314.80**
4	**0.68**	**$1,200,000**	**$819,616.15**
5	**0.62**	**$1,500,000**	**$931,381.98**
6	**0.56**	**$2,100,000**	**$1,185,395.25**
7	**0.51**	**$2,600,000**	**$1,334,211.11**
8	**0.47**	**$2,900,000**	**$1,352,871.40**
9	**0.42**	**$3,100,000**	**$1,314,702.62**
10	**0.39**	**$4,000,000**	**$1,542,173.16**
		NPV	**$2,917,616.88**

Since the net present value is positive, this means that the investment in the project is feasible and results in profits.

Decision analysis has evolved from a theoretical model of individual rational choice to a practical tool for individuals, small groups and "unified" organizations, which helps them achieve sound decision-making that takes into account the behavioral characteristics of individuals and the group. Decision analysis has also shown its value and it is time to use it on a large scale in making societal

decisions, and for this we need to understand the reality of the decision through the use of the effect diagram, which expresses a drawing tool used to control the essence of the problem so that it provides an accurate method for graphic communication of the decision problem and is great tools for discussion With management, though, most of the information is hidden behind the node (French, Argyris, 2018).

The impact diagram is characterized by developing a model based on a correct problem, and it is built at the beginning of the project to give us the mental map and the correct course of action in this project. We stand on the true value of every doubt, excluding problems that we do not want to study in the project and working on comparing alternatives and estimating the value of information so that we collect information about these problems and can control them and exclude alternatives that are not related to the topic. (Imran, 2019)

Another method of decision-making that helps the decision-maker to solve the problems he faces through a tool that displays the results of multiple decisions in a simplified and logical manner that facilitates understanding and evaluating alternatives and choosing the best one, which is the decision tree. The benefit of using the tree for the transparency and ease of analysis, where all branches of the decision-making process can be seen graphically, and the decision tree depends on the quantitative method in addressing a particular problem, by choosing the best or optimal available alternatives, and excluding paths that are not of equal importance to those that have been chosen. Decision tree analysis technology allows you to better prepare for each eventuality and make the most informed choices for each stage of the project. It is also very easy to understand and follow a decision tree when it is properly organized, each option and the resulting potential outcome flow logically into each other and thus because the decision tree presents information in a straightforward manner, it can be analyzed and used quickly to make critical decisions (Kitsios, 2020).

The third question: What is the logical relationship between the decision analysis models in solving the problem?

We make decisions under uncertainty, and personal judgments about uncertainty are important inputs to decision analysis. The decision analysis approach allows for the inclusion of subjective judgments; They are important components of making good decisions. Decisions are made in the light of the results of statistical knowledge about some of the uncertainties involved in the decision problem and taking into account knowledge of the possible consequences of the decisions which can be measured by determining the loss or gain “benefit” to be incurred in each possible decision. One of the models that we use in decision analysis is the influence diagram, which provides a simple diagram to represent the decision problem, where the elements of the decision problem appear in the influence diagram using different forms that are linked to each

other by arrows in specific ways to show the relationship between the elements (Terek, 2005).

From the above it turns out that influence diagrams are good for displaying the decision structure, but they hide many details. To reveal more details, for this we construct a decision tree, where the decision tree represents all the possible paths that the decision maker can take. A decision tree displays much more information than an effect diagram. However, it should also be clear that decision trees get 'chaos' much faster as decision problems become more complex and the effect diagram is superior in providing a graphical representation that is easy for people to understand (Terek, 2005) .

But both the effect diagram and the decision tree complement each other. The effect diagram is particularly useful for the problem structuring phase, and the decision tree is very useful for presenting the details of the problem. It is clear that any properly constructed effect diagram can be converted into a decision and vice versa. One strategy to use it is to start with an impact diagram to help understand the main components of the problem and then convert to a decision tree (Terek, 2005).

According to the decision problem presented by the Palestinian Ministry of Education, the analysis was carried out and the effect diagram and decision tree were used. Since decision makers want to communicate the overall structure of the decision problem model to other people to make the appropriate decision, it turns out that an effect diagram can be more appropriate as its representation is more attractive. After building the impact diagram and discussing it with the decision maker, a decision tree is built to ensure that the model accurately represents the decision position through a correct sequence of decisions and uncertainties that must be resolved before moving on to the next decision and then the decisions were arranged.

An impact diagram helps to develop the basis for a decision as it begins with values and proceeds to develop an understanding of alternatives and information (essentially uncertainty) in an easy and logical way important to decision making. Decision trees are a more convenient means of representing situations in which one branch of a tree can lead to a different set of nodes than another and this type of information is difficult to effectively represent in an effect diagram (Bielza, Gómez, 2011).

Summary of the results of the draft resolution:

Decision-making is one of the most difficult tasks undertaken by the manager. Rather, I can say that leadership is decision-making and dealing with problems constitutes the core of administrative work, including the decision-making and decision-making process. Because it depends on the scientific method.

The results of the search "Application of e-learning strategies in Palestinian universities" as shown in the decision tree by updating a network infrastructure

The Internet has high-quality access lines with subscriptions and appropriate speeds for students and learners, and it works to provide technical support to ensure the efficient performance of the network.

Recommendations:

Based on the findings of the research, some recommendations can be summarized in the following:

1. Obtaining political support from the Palestinian government to develop policies and directives to organize e-learning in Palestine, as the application of e-learning management needs to change the culture of administrative organization.
2. The transition to e-learning is preceded by changing the infrastructure of the Internet, providing technical support for devices, equipment, networks, and the necessary computers and technical equipment.
3. The student is the focus of the educational process when applying e-learning, so he must be qualified to use e-learning tools, qualify teachers to develop their performance and skills, and work to develop multiple and intensive training programs.
4. Starting to develop a vision and a vision for e-learning, and put forward this vision and vision for institutions and companies to start submitting their offers to the Ministry in an effort to implement the best offers that are in line with the vision, and e-learning objectives to reduce the financial burden on the government and the urgent need for partnership with the private sector within the vision Unified with the Palestinian Ministry of Education.
5. Motivating schools and teachers to work to implement e-learning, provided that the use of e-learning technology becomes one of the main criteria in evaluating teachers' job performance and the resulting financial incentives.

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