

# The Feasibility Model for Evaluation of Implementing Virtual Educations A Case Study

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## ABSTARCT

In line with the achieving organizational productivity, quality, efficient training of employees is of high importance. Accordingly, the present study explores the evaluation model of executing virtual trainings in the National Iranian Oil Products Distribution Company (NIOPDC). The basic question of this research is that: what are the dimensions and variables of evaluation model of performing virtual training in aforesaid company. Participants of this study consist of the staff working in the administration of the NIOPDC, and classified random sampling is used for determining sampling. Data have been collected through distributing questionnaires to the staff present at the office, using field-descriptive research method. Using t-test, the obtained results suggest confirming all the variables of the model and also weak and medium status of the educational, official, legal, technologic, social, cultural and economic variables and undesirable status of strategic variable. At the end, based on the results, some suggestions are offered for the managers among the population.

**KEY WORDS:** education, virtual training, information technology, plausibility, National Iranian Oil Products Distribution Company (NIOPDC)

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## 1. INTRODUCTION

Due to the expansion of information technology and the influence of distant mass media into the heart of society, training tools and techniques have also undergone development. These instruments and procedures are developing in the direction that facilitates learning for any individual, at anytime, and anywhere. This subject has been pursued more seriously with the advent and development of internet, and subsequently, some tools, procedures and standards were offered for training and more recent reforms are regularly carried out (Kennedy, 2008).

Currently, most developed countries are developing cyber universities and classrooms. Establishment and handling of these institutes will facilitate quick and effective access to the world information sources, bringing about more communications between teachers and students. They can also help attract more teachers and skilled human resources from around the world; eliminating or diminishing troublesome obstacles and restrictions; meanwhile, creating some problems and challenge. After all, it is certain that virtual educations will create appropriate arenas for improvement and development of talents and innovations, thus will promote the efficiency of training processes, (Delmaghani, 2004). Thanks to the development of computer-based educations, traditional training models will be converted to modern ones. In the modern system, the learner will have more active part, combining computer models with individual and social skills which will finally promote participation. Currently, the most fundamental debate concerning science training in many developed countries is how to prepare the students for the society that is rapidly growing computerized, (Mohseni, 2002). In recent century, the sole distinguishing factor among organizations is faster learning, (Lalli, 2003). The structure and process of traditional education is not Responsible for human community in Internet age (Feyzi, 2003). The new millennium will create change in plans of "distant learning or virtual training" under educational technology which will push back the traditional classroom, ( Aydin & Tasci, 2005). Satellite technology, audio-visual cassette tapes, telephone and Internet conferences joins millions of people to learning groups. Colleges and Universities will have the highest opportunities for distant learning, (Jallali, 2001). All of these developments are due to the modern technology. Statistics has shown that instructional compact disks (CDs) have been the most highly applied educational means by 53%; although this course has been reversed after five years, and it is predicted that e-learning will rank the first educational position by 63%, (Lalli, 2003).

Most organizations in 21<sup>st</sup> century have been affected by the aforesaid developments in information technology, these changes have influenced all their echelons and functions. One of them is e-learning which speeds up achieving individual and organizational goals through designing plans, policies and e-training activities, ( Ale-gha, 1999). Regarding the NIOPDC, and its mission type, broadness and strategic nature of the services offered, there is mainly less time chance left for classroom learning. Accordingly, it requires modern training approaches which provide inclusive and place-independent training. With regard to necessity and the advantages obtained from the use of virtual education in NIOPDC and also the necessity of collaborating with

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modern technologies and reducing the costs of traditional education in classroom, the researcher assumes the problem of evaluation model for carrying out virtual educations in NIOPDC; thus, asking the following question: What are the dimensions and variables of evaluation model for performing virtual education in NIOPDC? On this basis, some hypotheses were formed and later tested in statistical population.

## 2. LITERATURE REVIEW

The first generation of Open Universities used to operate mainly through written documents and education through corresponding in 19<sup>th</sup> century and in the second generation, distant training were also added to the former procedures. Nowadays, we are heading towards the 3<sup>rd</sup> generation of these institutions which deeply rely on the application of multimedia and education in geographical distance. The birth time of virtual university can be regarded the 1980s, coinciding with the spread of Internet around the world. It was the United States of America that pioneered in virtual education. Currently, some of the universities of the world have begun educating through Internet, including the Open University in Britain which is the best-known higher education institute regarding distant training, (Mohseni, 2001).

In 2001, the University of Science and Industry in Iran were authorized by the Higher Education Ministry to establish a virtual university; although it did not manage to register any student until 2004, coinciding with Shiraz University's starting distant courses. After these two universities, several others such as Amir Kabir University, Khajeh Nassir University, Isfahan University and so forth began to admit students in virtual form, (Kia, 1999).

In order to conceptualize any phenomena, it is necessary to define it accurately, virtual education is of no exception. In terms of virtual education, there is no exclusive definition to be agreed upon by all authorities; nevertheless, there are common views about its nature. In the following, some definitions are given:

Fallon (2004) believes that "any kind of learning, instruction or upbringing offered using known computer technology, particularly Internet-based technologies is called e-learning". Ebadi(2004) holds that " e-learning is a body of educational activities using electronic tools such as audio, visual, computerized, and virtual networks". Horton & Horton (2003) (?) believe that "in a broad definition, e-learning or e-training consists of any use of web and Internet technologies so as to create learning experiences". " In fact, e-learning is the product of rapid changes and developing cycle of modern technologies in its true sense", (Zaree & Zavaraki, 2009).

Khan (2005) considers three major features for an e-learning system, holding that "e-learning should be flexible, distributed and open". In his view, any of these characteristics has its own definition. "Flexibility means that in this system, the learner may control his own means of learning. Distributed means travelling the geographical and time borders so as to access contents of the e-learning system; and finally, to be open means eliminating learning obstacles for learners with different conditions and facilities". Khan maintains that "to be open and flexible are two separate items; whereas to be open is a technical subject, to be flexible is related to designing", ( Khan, 2005). Distant learning approach can respond to the three following objectives:

1. To facilitate access to training( bridging the gap between learner and the training location/increasing the number of learners/reducing costs/ preventing the increasing number of lecturers/decreasing the distance between living and work place of learners and access point to education).
2. To offer instruction more flexibly and individually (establishing continuous training in its true sense and eliminating various obstacles including psychological ones/incorporating continual education at workplace and everyday life.
3. To reduce social isolation (preventing marginalization of people who do not have access to current education (Mohseni, 1999).

Some of the advantages of e-training can be referred to below:

- It reduces the costs of fixing and maintenance of the buildings of old buildings and facilitates learning.
- It reduces the expenses concerning the travelling of teachers and commuting of students.
- Students can learn and understand the subject matters with regard to their abilities and with arbitrary speed, having access to education anytime and anywhere.
- Students will have the right to choose their subject matters to study.
- Students will be able to communicate with the students and teachers all over the world and share their knowledge.
- All the students of the world can share knowledge indiscriminatingly.
- Unlike traditional teaching methods, in which teacher is the sole speaker; instruction in e-training is reciprocal.
- Using multimedia facilities can help learn and understand better.

### 3. Evaluation models of an organization readiness fro virtual educations

Regarding the evaluation models of an organization readiness fro virtual educations, various opinions have been mentioned which include questions, directions, strategies models and tools for evaluating for readiness of organizations. In this part, some of the various well-known categories are studied in order to offer appropriate classifications for factors influencing readiness of an organization for establishing e-learning.

### 3-1: Chap Nick's Model

Chap Nick has developed an instrument for evaluating organization readiness for e-learning. He has introduced his instrument as a model for measuring the need of e-learning and stated that his model would help answer questions that follow:

(1) Can we perform this job? (2) If we can, how should we do it? (3) What will be the achievements, and should they be measured?

To measure them, he has categorized 63 questions within 8 variables as follow:

- I. Psychological: this part concerns variables such as individual learning styles, their attitudes to change, their sociability and so forth. In fact, it studies individual mental states.
- II. Sociological: this section deals with interpersonal and environmental aspects of which pursue e-learning.
- III. Environmental: this factor considers and evaluates effective forces, including political and legal obstacles, combination, distribution and the number of addressees which are inside or outside of an organization.
- IV. Human resources: in this part, available forces for handling e-learning and a high-ranking executive to support it are among the issues to be measured.
- V. Financial: this part considers the size and the type of allocating budget on e-learning.
- VI. Technological skills: it concerns skills such as typing, connecting to network, elementary use of computer.
- VII. Tools: This section considers various soft wares, supporting procedures and their updating.
- VIII. Content: this part deals with the content properties to be offered electronically, and its objective, (Chap Nick, 2000).

### 3-2. Rosenberg's Model

Rosenberg has formulated a questionnaire consisting of twenty questions for evaluating readiness for e-learning in organizations. His model includes the following seven factors:

- Business readiness: this factor relies on accessing appropriate technologies and the preparedness of organization's employees.
- The nature of learning variable and e-learning: the questions of this part evaluates the understanding of the executives of an organization from learning and e-learning.
- The value of designing learning and information: this part considers whether an organization is prepared enough to differentiate between learning needs and information needs, or not.
- Change management: it explores an organization's readiness to pass successfully from traditional learning to e-learning and such issues as senior support of this aspect.
- Restructuring learning: it deals with exploring the learning department readiness in an organization to adapt for new developments
- E-learning industry: this section considers the capability of an organization to transact with e-learning market.
- Personal commitment: the degree of respondents's commitment to e-learning will be measured, (Rosenberg, 2000).

### 3-3. Anderson's Model

Anderson has offered a model consisting of five factors called five Cs and developed questions for evaluating organizations' e-learning readiness based on his model.

Anderson's Model consist of following factors:

Culture: does the organization support e-learning culture? What is the attitude of the organization toward the development of employees? Who is responsible for the education of staff ?

Content: is the intended content appropriate for e-learning?

Capability: this part includes suitable hardware, infrastructure and support

Costs: can the organization afford to pay the costs of e-learning?

Customers: will the users use e-learning?

However, despite previous ones, Anderson's questionnaire includes open questions, and offers no choice to the respondents, (Anderson, 2002).

### 3-4. The Model of Aydin & Tasci

To evaluate e-learning readiness among one hundred superior Turkish firms, other researchers have considered four factors including technology, innovation, individuals and personal development.

-Technology: in this study, it means availability of proper software and hardware.

-Innovation: meaning organization's past experiences in using new procedures and changes, for example, successful prevailing quality management in the past can lead to more readiness in managers and employees to implement e-learning project.

-Individuals: this factor concerns the human resources of an organization, including skills, knowledge, responsibilities and etc.

-Personal development: this factor is based on more open atmosphere and thus individuals have successful and progressive morality, and therefore more readiness in applying new projects.

-In this study, each of these factors has been investigated, regarding three aspects such as resources, skills, and attitudes. For example, if an organization, despite its sufficient resources to carry out e-learning, lacks necessary skills to use them, it will result in breakdown. Similarly, there may be another organization having necessary resources and skills, at the same time, having negative attitude toward this technology will also lead to failure as the previous one, (Aydin&Tasci, 2005).

**4. Conceptual Model**

Materializing virtual education necessitates that various aspects of preparedness be taken into account, in terms of its technical infrastructure, policy-making, human resources, and organizational readiness. Thus, in order to evaluate e-learning, first, it is necessary to determine the main structure of the study, to base it on an appropriate framework. As it was previously mentioned, in terms of e-learning different variables have been offered; concerning the evaluation of e-learning in NIOPDC which requires a comprehensive overview, therefore, it is attempted to choose frameworks which deal with various dimensions of e-learning evaluation. Meanwhile, it is tried to select variables which have been employed and their validity confirmed in different models. Table 4-1 has summarized various evaluation models of e-learning readiness.

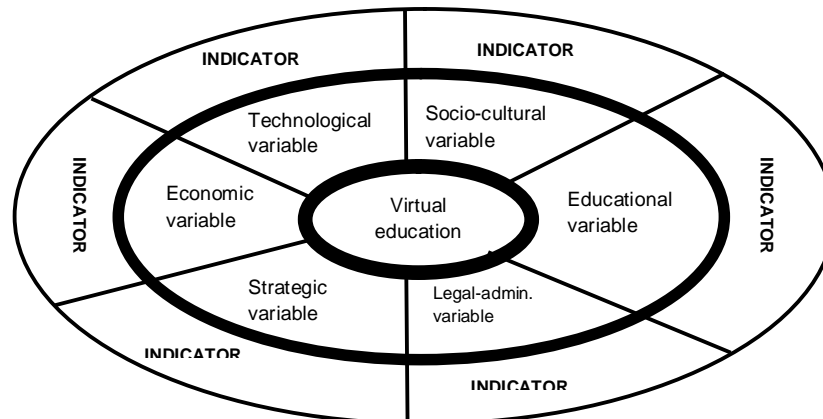
TABLE 4-1: variables of e-learning based on different autors(researchers)

Authors→ Variables↓	Chapnik’s Model	Rosenberg’s Model	Anderson’s Model	Aydin & Tsci’s Model	Ghaeni & Abdhigh’s Model
Variable 1	psychological	Business readiness	culture	technology	cultural
Variable 2	sociological	Variable nature of learning e-learning	content	Innovation	Human resources
Variable 3	Human resources	Value of designing & e-learning	capability	individuals	technical
Variable 4	financial	Change management	costs	Personal development	structural
Variable 5	environmental	Restructuring learning	customers		
Variable 6	Technical skills	e-learning industry			
Variable 7	tools	Personal commitment			
Variable 8	Content				

Based on the conducted studies, the proposed model has been presented within diagram 4-1. This diagram consists of six variables as follow:

- 1) Socio-cultural variables such as psychological and sociological variables of Chapnick’s model, nature of learning and e-learning variable, personal commitment, restructuring learning variable of Rosenberg’s model, cultural variable of Anderson’s model, innovation and personal development of Aydin and Tusci, and cultural variable of Ghaeni & Abde-hagh’s model.
- 2) Educational variables consisting of variables of human resources and technological skills of Chapnick’s model, restructuring learning of Rosenberg’s model, customers and content variable of Anderson’s model, individuals’ model of Aydin & Tusci, human resources variable of Ghaeni & Abde-hagh’s model.
- 3) Legal-administrative variables including: environmental variable of Chapnick’s model, e-learning industry of Rosenberg.
- 4) Strategic variable including structural variable of Ghaeni & Abde-hagh.
- 5) Economic variables consisting of financial variable of Chapnick, cost variable of Anderson and structural variable of Ghaeni & Abde-hagh’s model.
- 6) Technological variable such as technical variable of Chapnick, business readiness variable of Rosenberg, capability variable of Anderson, technology variable of Ayden & Tusci and technical variable of Ghaeni & Abde-hagh’s model which are referred to below.

Diagram 4-1: conceptual model of the pattern for evaluation of implementing virtual education



**5. Research hypotheses**

1. In NIOPDC, the technological variable for performing virtual education is of desirable status.
2. In NIOPDC, the pedagogical variable for performing virtual education is of desirable status.
3. In NIOPDC, the strategic variable for performing virtual education is of desirable status.
4. In NIOPDC, the legal-administrative variable for performing virtual education is of desirable status.
5. In NIOPDC, the economic variable for performing virtual education is of desirable status.
6. In NIOPDC, the socio-cultural variable for performing virtual education is of desirable status.

**6. Research type and instrumentation**

The present study is quantitative in terms of aim descriptive, applied use, time, cross-sectional, data type. The main instrument in this investigation has been a researcher-made questionnaire, using research tools of relevant experts. The reliability of the measurement instrument has been confirmed, employing Cronbach test at  $\alpha=0.83$ , and the validity of the questionnaire was confirmed, using content-validity.

The participants of this study consist of all managers and staff of the administrative and commercial management of NIOPDC, who were selected through using Koukrun formula. Some 144 people were chosen using stratified random sampling from among 232 employees, by reliability index of 95% and estimated error of 5%, and success probability of 5%. In terms of stratified random procedure, participants' sampling is carried out using various spectrum of managers and experts.

**7. DATA ANALYSIS**

To measure the normal distribution of variables, the current study has employed Kolmogorov–Smirnov test, and to investigate the status quo of the variables, single t-test has been used.

**7-1. Examining the model variables in status quo**

To explore the status of all model variables, research hypotheses were developed, in terms of the desirability of status in NIOPDC to implement virtual education. The results of data analysis are shown in Table 7-1.

Table 7-1: One-way Anova t-test for investigating the status quo of research variables

Variables	Statistical Test=3				
	t	Significance level	Difference of average	minimum	maximum
Technological	147/2	039/0	47222/0	0256/0	9188/0
Socio-cultural	772/2	009/0	50000/0	1338/0	8662/0
Educational	116/2	042/0	38889/0	0158/0	7620/0
Legal-administrative	446/2	020/0	47222/0	0803/0	8642/0
Strategic	099/1	279/0	56410/0	1413/0-	4747/0
Economic	064/2	046/0	33333/0	0063/0	6603/

The results shown in Table 7-1 indicate that tests results are bigger than standard statistics (1/96) for all variables except for strategic variable. Thus, it can be stated the obtained value has not been located in critical area except for the strategic value and accordingly the null hypothesis is rejected and opposite one is confirmed, suggesting that in present situation and with regard to the education being implemented, all variables, except the strategic one, is of the desired status for carrying out virtual education in NIOPDC.

**7-2. Ranking the variables of second questionnaire (evaluating the status quo)**

In this part, concerning the value of significance quotient obtained for each hypothesis, the priority and the status quo for the research variables were determined.

Table 7-2 illustrates the results of a t-test and the average responses to these variables.

Variables' Ranking	Research variables	Quotient of significance	Calculated t	Average answer to per variable	Status of Hypothesis
1	Socio-cultural	0/009	2/772	3/96	Confirmed/average
2	Legal-administrative	0/020	2/446	4/04	Confirmed/average
3	Technological	0/039	2/147	3/95	Confirmed/weak
4	Educational	0/042	2/116	4/01	Confirmed/weak
5	Economic	0/046	2/064	4/19	Confirmed/weak
6	Strategic	0/279	1/099	3/92	Rejected

**8- Conclusion and suggestions**

In present era, the acting domain of the organizations have altered; and the intellectuals believe that organizations are functioning within complicated and unpredictable processes. In this domain, the key source of achieving success depends on gaining, creating and effective use of knowledge. The process of organizations movement toward success can be facilitated through education and generally learning mechanism. Generally,

this issue is high on the agenda of most organizations. However, the status quo provides less time opportunity for classroom learning. Accordingly, the organizations need to employ modern pedagogical approaches so as to facilitate inclusive and place-independent learning. Therefore, implementing e-learning in NIOPDC is of high significance. In this study, regarding the various models of evaluation of e-learning, local model were offered and regarding its dimensions, some hypotheses were developed and tested. An important point to mention considering the status quo, the priority of strategic variable has the worst situation. The question of importance to mention is that to remove this drawback, the orientation of this firm should be changed towards e-learning and reducing physical area. If the approach of knowledge orientation is to be considered seriously, strategic vision in managers' words and manners will be developed. The strength of the participants lies in cultural domain to carry out e-learning which is apparent in exploring the current situation. Based on the results of this study, following suggestions can be focused on separate dimensions. Obviously, taking reform actions should be based on the efficiency of variables and their present situation which were previously discussed.

#### 8-1. Technological:

- to design strategic plans to establish communication between different departments.
- to establish a virtual unit in educational department of the company in order to handle, plan and develop instructional textbooks.
- to increase the number of computers and to take necessary actions for managers and teachers in order to access high speed Internet.
- to provide computer facilities fairly for all educational areas.
- to support seriously software and hardware affairs.

#### 8-2. Socio-cultural:

- to take necessary steps to familiarize the entire staff with e-learning.
- to take necessary steps to control ethical issues in web-based education.
- to dispatch experts and managers to visit organizations equipped with virtual education system.
- to orient employees with the advantages of virtual education.
- to ensure responsible people through offering existing models in the organization.
- to determine cost-income chart based on the consequences of performing developed system.

#### 8-3. Administration rights dimension

- to develop standards for validating educational content and material
- to establish electronic security through cryptography
- to design legal framework to support innovative plans for e-learning.
- to classify pedagogical materials based on the extent of access.
- to purchase relevant software through firm-confirmed organizations.
- to design operating instruction and determining priorities.

#### 8-4. Educational dimension

- Regarding the complexity of available software and in line with production, some appropriate software should be produced harmonizing with educational system in NIOPDC.
- Incorporating some orientation course in order to promote IT skills
- Creating a team of teachers, designers and educational technologists to design materials for network education.
- Developing e-libraries together with printed publications.
- Needs analysis and identifying new educational problems .

#### 8-5. Strategic dimension

- Developing clear strategies for educational department of NIOPDC.
- Designing comprehensive vision regarding IT.
- Implementation of education within a project.

#### 8-6. Economic dimension

- Establishing coordination and participation of all managements in terms of investment on e-learning areas.
- Allocating necessary budget to operationalizing virtual education in organization.
- Persuading IT department for financial contribution through IT budget.

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