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Aim & Scope

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Face Recognition utilising Elman neural networks

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Abstract

Processing photos and recognizing them by facial architectural features lies among the basic applications of the neural network systems. This study aims investigate face recognition through utilising Elman Neural Networks. In this paper, the remittance waves (Wavelet) are used in order to withdraw more accurate details of the image, and then features were extracted based on the seven resolution and the four statistical properties (location measurement mean, standard deviation and skewness and kurtosis), which address the problems of image capture by the surveillance cameras. This study found that the recognition percentage reached 92%. This study indicated the ability of the seven resolutions and the four statistical features (measuring the middle position, measuring the standard deviation, measuring the inclination and measuring the inclination coefficient) in providing fixed characteristics that can be used as image features for the purpose of recognizing the wanted people. The study also concluded that the success of the neural network in recognizing the wanted due to its ability of handling ongoing data, and that the merging between the engineering features (the seven resolutions and for statistical features) gives good results in recognizing the wanted people.

Keywords: Face recognition, Elman Neural Networks, facial architectural, image capture.

1- Introduction:

Processing photos and recognizing them by facial architectural features lies among the basic applications of the neural network systems, especially in: Extracting distinguishing features and describing the photo, and in categorizing the photos or the extracted features (Brimblecombe, 2002). This system is designed to achieve the state security by recognizing the wanted photo. It depends on the seven resolutions and the four statistical features to extract the characteristics that solve the problems in taking photos.

Artificial neural networks have been used as a tool to complete the recognizing process and to add accuracy and efficiency in recognizing the needed facial photo; this is because the neural networks are considered as a strong tool in pattern distinction even if the information about these patterns is so few (Sung & Poggio, 1994). The neural network technique is used in the algorithms of analyzing the photo distinguishing features; as the neural network consists of a set of neurons which are connected to each others. Each one of them can process a group of signals applied on its entries and turns them into a group output signals of specific characteristics. The links between the neurons, which are labeled by the processes of weight, performs the central role in these neurons' functions as well. In this case, the neural networks have good generalization ability because they can distribute the learning experience resulting from each neuron to all the elements of the network (Stefan et al., 2004). As a matter of fact there are many kinds of neural networks. However, in this system, Elman neural network is used; and there have been good and guaranteed outcomes in the system operational use.

2- Previous Studies:

In 1987, Kirby and Sirovich (1987) conducted a study that depends on applying the principle of analyzing face elements and the standardized techniques of linear algebra in facial recognition; a thing which was considered as an essential leap later. Continues researches have been developed after that, and the idea of utilizing mathematical methodologies has emerged. In 1997, Wiskott et al. (1997) started depicting the face as a graph whose ganglions are determined by certain points like the eyes, the nose and so on. These ganglions contain some of the wavelet transformation processes, while the edges represent the space between these points. After that, all the graphs of the face needed to be recognized are compared with

graphs of the faces stored in the data base. In the beginning, the neural network methodologies depended on Kohonen Associative Map and used a small number of facial images.

Then an accurate recognition even in the case of cluttered and distorted input images was announced. This ability was also shown by using Optical Hardware. Karl and Kim (2006) used photo processing techniques to quickly identify the unique points that clearly appear on the face, and then to find the spaces and the angles in between these points to generate a significant signature of the face in the photo.

Lekshmi & Sasikumar (2009) identified that facial distinction process has been performed using wavelet analysis and the support Vector Machine (SVM). In other hand, Esbati & Shirazi (2011) clarified that facial recognition after a classification process of the data base which contains the photos of the faces depending on PCA and KPDA using SVM and Elman neural network.

Neural networks were used later within a way to categorize people according to their gender, which automatically extracted a ray of features of 16 dimensions like eyebrows thickness, mouth and nose width, six chin radii, and so on (Ramo & Ramo, 2011). A Hyper Basis Function (Hyper BF) was used for each of the genders. The input images were measured according to scale and rotation using eyes' positions, which were pointed automatically. After comparing the outputs of the two Hyper Basis Functions, the hyper with the higher output determines the gender label in the tested image. In the actual categorizing experiments, only a partial set of the features ray of the 16 dimensions was used. The validation of some results of the automatic categorization was proved through using humans. Recognition procedures usually consist of three stages (Bouzalmat, et al., 2011):

- Reading and initial processing of the image (location alignment, segmentation, clutter removal and other enhances).
- Describing the image (extracting the distinguishing features of the image in the light of stored patterns like the surface curving patterns).
- Categorizing by using the neural network algorithms (where these features are analyzed and the final recognition decision is made).

Methods of categorization were enlarged according to the gender which led to a facial recognition using an expanded ray of features of 35 dimensioned and a Hyper BF for each person. The results of the

categorization of the different groups from the synthetics (coefficients, centers, and Hyper BF metrics)) were attained. There was also some participation in explaining the caricature behavior for the Hyper BF by psychophysical studies.

3- The Seven Moments:

The seven moments were used as they are typical for a number of applications to perform the fixed distinction of a two dimensioned photo. I have also depended on the algebraic method using an non-linear equation for the values which represent the geometric moments (GM), which is a characteristic needed for fixing when interpreting the photo, modifying the size (zooming in and out) and rotation. This type of values is the perfect scale to recognize the Arabic and English letters and the digital photos. In this study, the (GM) technique and its set of fixed values were used due to its characteristics for being fixed as opposed to converting, rotation and scoring and its features for each form of the group. This set of constants is able to use dual or a real value depending on the type of the problem that is needed to be resolved (Al Hadidi, 2002).

The central means are known as (mpq) and as follows:

$$m_{pq} = \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} x^p y^q f(x,y) dx dy \quad \dots(11)$$

Where $p, q = 0, 1, 2, \dots$

X, Y are the two coordinates of the first photo unit respectively.

P, q represents the layer of the regular mean.

F(x, y): is the value of the contrast equation of the image and it is 1 or 0 in the two dimensioned photos.

X and Y represent the standard centers of the image in the direction of x and y.

$$m_{pq} = \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} (x - \bar{x})^p \overline{(y - \bar{y})^q} f(x, y) dx dy \quad \dots (12)$$

$$\bar{y} = \frac{m01}{m00}, \quad \bar{x} = \frac{m10}{m00}$$

$$m_{pq} = \sum_x \sum_y (x - \bar{x})^p (y - \bar{y})^q f(x, y)$$

$$m_{pq} = \frac{M_{pq}}{\mu^2_{00}} \quad \dots (14)$$

$$g = 1/2(p + q) + 1 \quad \dots (15)$$

$$p + q = 2, 3, \dots$$

Seven invariant means could be derivate from the second and third mean which are given as follows:

$$\phi_1 = \eta_{20} + \eta_{02} \quad \dots (16)$$

$$\phi_2 = (\eta_{20} - \eta_{02})^2 + 4 \eta_{11}^2 \quad \dots (17)$$

$$\phi_3 = (\eta_{30} - 3\eta_{12})^2 + (3\eta_{21} - \eta_{03})^2 \quad \dots (18)$$

$$\phi_4 = (\eta_{30} + \eta_{12})^2 + (\eta_{21} + \eta_{03})^2 \quad \dots (19)$$

$$\phi_5 = (\eta_{30} - 3\eta_{12})(\eta_{30} + \eta_{12}) [(\eta_{30} + \eta_{12})^2 - 3(\eta_{21} + \eta_{03})^2],$$

$$+ (3\eta_{21} - \eta_{03})(\eta_{21} + \eta_{03}) [3(\eta_{30} + \eta_{12})^2 - (\eta_{21} + \eta_{03})^2] \quad \dots (20)$$

$$\phi_6 = (\eta_{20} - \eta_{02}) [(\eta_{30} + \eta_{12})^2 - (\eta_{21} + \eta_{03})^2],$$

$$+ 4\eta_{11}(\eta_{30} + \eta_{12})(\eta_{21} + \eta_{03}) \quad \dots (21)$$

$$\phi_7 = (3\eta_{21} - \eta_{03})(\eta_{30} + \eta_{12}) [(\eta_{30} + \eta_{12})^2 - 3(\eta_{21} + \eta_{03})^2],$$

$$+ (3\eta_{12} - \eta_{30})(\eta_{21} + \eta_{03}) [3(\eta_{30} + \eta_{12})^2 - (\eta_{21} + \eta_{03})^2] \quad \dots (21)$$

(Hu, 1962) proved that these means are invariant for translation, rotation and scaling.

4- Elman Neural Network:

The neural networks were used in this field because they are specialized in differentiating the different patterns in the performing processes. In this research, Elman neural network was used. This kind of networks consists at least of three layers of cells: the input layer, the hidden layer and the output layer. Yet, it also has a context layer which gives a feedback of no weight; as for the output, it moves from the hidden layer towards the output layer.

Elman's network keeps the values and give them back when the following performance is done to the network: these values are sent through the training and retrieving of the weights to the hidden layer, and because Elman's network has a kind of network with a feedback effect, meaning they have a link from the hidden layer backward to a private layer, this network depends on the (current inputs, previously registered position and the network's output). This means that they can specify accurately what the preserved position

of the last process is. In other words, we will have an additional hidden layer which records the value resulted from the previous processes and which will be of much help in the training course (15) (17).

The ganglions in the hidden layer are performed by the TANSING referential equation which works on an area that is restricted in the terms of input by using the following equation (18):

$$a_1(k) = \text{tansig} (IW_{1,1}p + LW_{1,1}a_1(k-1) + b_1) \quad \dots \dots \quad (22)$$

The ganglions in the output layer are extracted by the PURELIN linear equation which works on an area that is restricted in terms of output using the following equation (12):

$$a_2(k) = \text{purelin} (LW_{2,1}a_1(k) + b_2) \quad \dots \dots \quad (23)$$

Where: P: the input matrix, IW1,1: the weight matrix of the hidden layer, a1, a2: the output matrix, b1, b2: the basis matrix, LW2,1: the weight matrix for the output layer, K: feedback rotation

PURELINE: is a neural transformation equation which works on the expense of the layers outputs from the inputs of the network.

The weights were prepared at random where the values are small and in the scale of [0, 1]. They have been adapted as initial weights for the network and then put in a data base.

5- Research Algorithm:

In this research, remittance waves (wavelet) was used to extract more accurate details, and the seven resolutions were used plus the four statistical features which solve a lot of the problems in taking the photo. Elman's network was used as a tool to complete the person recognition and to add more accuracy and efficiency in recognizing the needed face image. After getting good and guaranteed results in the function of the system, the values, which were attained through the extraction from the features of each photo that was taken, were stored in the database. In this system, two levels of recognition were used:



Level one: the user input the stored images and extracts the features (the seven resolutions, and the four statistical features) for each image and stores it in the database. The used network is trained on the attained results.

Level two: the user inputs the image he want to recognize and extract its features and get results without storing them in the database, and then input the results into the used neural network and compare the finale values with those stored in the database to show the final result of the recognition system.

5-1- Reading Photos: in this system, colorful images which consist of three layers (R,G,B) are read from the file of the database which is stored in a common path, and due to the big size of the photo the format used in the system is (BMP) or (BitMap). This kind doesn't have problems of losing data, where the image is a two or three dimensioned matrix; pictures of this size are usually so big and unidentified. This is when the size of the taken photos is changed to a particular size (128,128) so that the new size is specified to the face of the person. A certain number of images for some people who are needed to be recognized were used in this system, where seven photos of each person were input.

5-2- Photo Configuration: after storing the photo in the database in its colored version, it is transformed into grey images. The reason is that the seven resolutions and the statistical features which are used to extract the characteristics of the photo work on this kind of photos; in addition to that, the format of the grey images makes it easy to deal with photos when applying the rules. Plus, in the case of grey colors, the photos are clear of the effects which are found on them if they are colorful, and hence we get clearer results. This procedure is performed during the functions of the initial processes except for the image cuts because the seven resolutions takes their values from the characteristics of the whole image, and in case the image is divided into several parts, the values of the seven resolutions will be taken from each of the parts. After the extraction of the features is done, normalization is done by the Min-max method.

5-3- Wavelets: A separated two dimensioned wavelet was used to convert a photo and the result was four sets of features; one of them is a copy of the original copy with a low resolution and is called rounding features, whereas the other three sets are copies of the original photo with a high resolution called detailed features; these are a horizontal set, a vertical set and a diametric set. Most of the information is found in the rounding features, and we can zip the photo by taking these resolutions only (Al Neamy,2006).The purpose

of using wavelets is to minimize the photo size to a quarter of its original size and which contains more accurate details. We used the wavelet of the two dimensioned detached to transform the photo, and the result was for sets of factors: 1- a copy of the original image with a low resolution which is called (rounding coefficients A) that we will make use of in this research. 2- The other three sets are copies of the original image with high resolutions which are called (details coefficients: vertical set, horizontal set and diametric set). Most of the information are gathered in the rounding coefficients, and we can press the photo by taking these coefficients alone (Al Neamy, 2006) (AlBadrani, 2001).

The input of the wavelet was the grey gradation data of the image. As for the output of the wavelet, a part of the low resolution coefficient (rounding coefficient A) will be taken and from it the features could be extracted.

5-4- Extracting Features: extracting features is done after attaining a two dimensioned matrix (32, 32) which represents the image after transforming it from the grey form to the wavelet. Attaining these features is done on two axes:

Axis One: the seven resolutions; this has been depended on as a basis to extract features because these features remain fixed during rotation, maximizing, minimizing and transferring, and using them will make the extracted features both small and effective. It is from these seven resolutions and their name that a seven- valued number of the correct group as an outcome of extracting the photo's features. The rank of the *order* of the seven features is three.

Axis Two: the four statistical features; the values of these features vary according to the variety of the photo, the thing that makes it an advantage that can benefit in recognizing a person's image from the others'. With the help of these four features (1- measuring the middle position by applying the equation(6). 2- measuring the standard deviation by applying the equation(7). 3- measuring the inclination by applying the equation(8). 4- measuring the inclination coefficient by applying the equation(9)), we can complete the task of calculating the features of the image which imply in (11) a value as a result of each of the seven resolutions in addition to the four statistical features of the image which are stored in a database of the type Excel in a serial arrangement and is enhanced by the objectives data and is considered as an input of the used neural network. The statistical features were use actually to increase the characteristics.

5-5- Database: when applying the seven resolutions and the four statistical features on each image, the results are stored in the database which consists of a number of lines and 14 columns, where the sequence of the line refers to the name of the image whose features are stored vertically and which is followed by the next image. In this system, a sample of 16 persons' images is input- there could be any other set of numbers- in a serial arrangement and every person has got 7 images in the sequence that the first seven images are for the first person plus their features taken from the extracted characteristics, followed significantly by the next person's seven images. This work can be done on a huge number of people. There are samples of the people who were under the testing trial.

After storing the extraction values of the features in the database, other values are to be stored; those are the objectives values that are added to the database as well. The objective contains a value for each person stored in the database and these values are stored in the Binary form. In this system, a sample of 16 persons' images was input- any number can be input- so as each person has got seven images where the first seven images are for the first person. This is why the value of the objective is fixed which (0001) is.

5-6- Construction and Training of the Network: in this research, Elman's neural network that was compatible with the system was used because of its accurate results and efficiency in recognizing the patterns. This network depends basically in its function on the database where it takes the values of both the features and the objectives out of it. The network receives two matrixes which will be configured to be ready to input into the network; each one of them is a singular matrix. The first one contains results attained in the process of the features extraction (the seven resolutions and the four features) and the size of the first matrix (11) is a value that consists of seven values which are the results of the seven resolutions and four values which are the results of the four basic statistical features. These values determine their position in the database from the first till the second column and are taken in a serial arrangement according to the sequence of the images in the database. The matrix is configured by rotating it from the horizontal to the vertical shape to get it in the network according to the input form that should be vector. As for the second matrix, it contains the stored objective in the database and the size of the second matrix is 3 values which represent the number of the objective value and is positioned in the database from column 12 to column 14.



The Input Layer: it is the first layer of Elman's network which contains the first matrix (features extraction results), and the number of the ganglions in this layer is 11 just like the number of the extracted features that are stored in the database which are 11 as well.

The Context Layer: it has the same number of ganglions as the input layer because the network has got a temporary feedback and which gives a weightless feedback.

The Output Layer: it consists of three ganglions according to the objective data.

After the stage of constructing the network, the network starts a training stage by applying the (22) (23) rules.

Then, the extracted features values which are stored in the database are taken. These values (extracting features) which are input into the network are for producing the perfect weight (training); where the network is trained on a percentage of error that is estimated by (0,001) and a number of rotations estimated by (1079) to get to the needed objective.

6- Recognizing the Wanted Person System:

When all the past stages are done, the stage of recognizing the wanted person starts, which is the final stage in this system where the image goes through the following stages: (reading the image of the wanted person if he is among the wanted or not, transforming the image into grey colors, moving to wavelet, extracting features (the seven resolutions and the four statistical features), recognition system, showing the final result of the program.

First: the image is input in its colorful form, and then it is transformed into the grey form.

Second: the remittance waves (wavelet) are applied on the image where the most accurate part is to be attained.

Third: it goes into the stage of extracting the features and stored in a single matrix without passing through to the database.

Fourth: this matrix goes into the network to get the final results.

Fifth: these results are compared with the results that are already stored in the database, and either they are identical or close to them with an error percentage of (0,001). The system gives a feedback of these results which refer to a certain person.

7- Discussing the Results:

After fulfilling the suggested system and comparing it with the ideas applied by previous researchers, this study found that the recognition percentage reached 92% and it was calculated in the following way: Recognition percentage= the number of people the system was trained on/the number of people recognized .Some researchers used the linear algebra techniques in past researches. In these techniques, there is a flaw when maximizing or minimizing the image or when rotating the head.

All these flaws have been overcome in the seven resolutions which are not affected by rotating or motion, but they depend on fixed characteristics which are extracted from the features of the face; the thing that distinguishes this research from the others.

8- Conclusions:

This study indicated the ability of the seven resolutions and the four statistical features (measuring the middle position, measuring the standard deviation, measuring the inclination and measuring the inclination coefficient) in providing fixed characteristics that can be used as image features for the purpose of recognizing the wanted people. Wavelet was used to get a picture of more accurate features and details. The study also concluded that the success of the neural network in recognizing the wanted due to its ability of handling ongoing data, and that the merging between the engineering features (the seven resolutions and for statistical features) gives good results in recognizing the wanted people.

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Information Technology & its relation with Scientific Research at Universities

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I. ABSTRACT:

Information Technology has become of the most important tools in scientific research currently. This study aims to investigate the relation between information technology and scientific research. The study has concluded the importance of using Information Technology in scientific research and that the reasons behind using Electronic Information because they save money and time and provide the accuracy of information. The study also indicated the variety of the Electronic Information sources between the environment of the usage and the objective coverage along with access points and methods to reach information according to the providing points and databases. This study indicated the need to support for scientific research funding (annual) and development (long-term) to spread the culture of industry knowledge and harness energies research underlying available in the university to enrich competitiveness in strategic fields.

Keywords: Information Technology, scientific research, information accuracy.

1. Introduction

It seems that the whole world has made up its mind to reconsider the concepts of education, teaching and learning in order to be able to keep up with the global changes. We are living in the age of information; the thing that resulted in the formation of information society and which made the world depends on scientists in explaining and clarifying the problems of the society and finding solutions for these problems. In this age, Information Technology plays an essential role in scientific research. This study aims to investigate the relation between information technology and scientific research.

1.1 Study Significance

The significance of this study came from the importance of the study topic itself; which discusses many important issues such as:

1. Information Technology has become of the most important tools in scientific research currently.
2. The rise of Digital Economy and E-learning and its spreading all over the world.

1.2 Study Objectives

This study aims to achieve the following objectives

- a) Forming a collective theory of Islamic Economy through the use of IT.
- b) Developing the specializations of the Islamic Economy.
- c) Empowering the collective institutions of the Islamic Economy for standing in the face of the economic impacts of globalization in the Islamic World.
- d) Activating teamwork in order to gather research groups of multiple specializations in some of the faculties of the Islamic Economy.

1.3 Research Questions

The research is trying to answer the following questions:

- A. What is the nature of IT? And how are they related to scientific research?
- B. In what way can we make use of IT in scientific research in the field of Islamic Economy?
- C. How can we form a collective theory of Islamic Economy? And how can we develop its specializations? How to empower the Islamic Economy institutions using IT?

2. Information nature

It is very important to understand the nature of information as an essential entry to understand the nature of IT. Information is identified as a set of data and facts that belong to any subject and which aim at developing and increasing human knowledge. In this way they could be about, places, things or people (Hoskins, 2013). So, information is knowledge acquired through research, reading, communication or any similar means of getting to and possessing information (Gaines, 2011).

Through the previous definition, the following could be concluded:

- 1) There is a difference between data and information. Data are but letters, sentences, clauses, numbers and symbols which are uncategorized and unrelated to any one topic and which cannot be useful in their current form unless they are developed through the processes of analyzing and explaining which, in turn, if they are categorized, classified, sorted out and organized, these data can turn into information.

As for information, they are what we get as a result of processing data in a way that increases the level of knowledge for those who will get them, and of course they are of a high importance and value in making decisions.

- 2) The meaning of knowledge could be understood as a set of datum that are directed and tested and which serve a certain topic and have been processed, proven, publicized and updated so that we can through the accumulation of these data and their uniqueness get a specialized knowledge in a specific topic.

- 3) Therefore, we can conclude that information is a specific single knowledge and an integrated unit of datum and cognitive facts. In a wider philosophical sense, information can be identified as the contents of the relation between material things which in their interaction and overlapping with each other they demonstrate themselves in a changeable form.

2.1 Kinds and Characteristics of Information:

Information can be classified into many sections according to the aim of their usage; the most important of which are: (Andrews, 2002)

- 1- Developing and Promoting Information: like reading a book or an article and acquiring new concepts and facts through which the cultural and scientific level of the human being could be improved and their perception could be widened.
- 2- Performance Information: like using briefings, references and other documents in completing a job that is required to be done.
- 3- Educational Information: like reading the basic study subjects and teaching materials.
- 4- Intellectual Information: these are the thoughts, theories and hypothesis about the relations that could exist among the elements of a problem.
- 5- Research Information: this includes the performance and results of experiments plus the researches results.

Information also has got characteristics, the most important of which are (Bawden, 2001):

- 1- General Characteristics: these are known for having an intellectual and a materialistic nature, and that is their representation in productive services through paper-based or electronic publishing. In addition to this they have a utilizing nature through making use of the materialistic nature.
- 2- The Human Feature: which means there is no information except through the human observation.
- 3- The Expanding Feature: in other words, the more we use them, the more profitable they become.
- 4- The Pressure Feature: the increasing amounts of information can be controlled through centrism and integration, and by compressing them so that they can be used in different media.

5- The Substitution Feature: This means that they can replace other sources like money, human powers and raw materials.

2.2 The significance of information

Information plays a vital and an important role and it shows clearly in (Karim, 2011):

- 1) Enriching the scientific research and developing sciences and technology.
- 2) Contributes in building information strategy on the national level.
- 3) Having a tremendous significance in the fields of economical, social, administrative and cultural development in addition to many other fields.
- 4) They are considered the main source in making the right decision and solving the problem.
- 5) Information plays a great role in the post-industrial society. This is because in the pre-industrial society and the agricultural society, the great dependence was on the raw materials and natural sources of energy like wind, rain, animals, and human labor. While, in the industrial society, dependence became on the generated energy like electricity, gas, coal, and nuclear power.
- 6) Information helps us to transport our experiences to the others, solving the problems that we face and making use of the available knowledge.
- 7) It has a great role in the perfection of timing through the cycle of processing, inputting and reporting.

Furthermore, the availability of the information which is relevant to the purposes of economical and social development can lead to achieving the following gains (Atik,1999):

- 1- Developing the potentials of the society and utilizing the available information.
- 2- Warranting and coordinating the efforts of the society in research and development in the light of the present information.
- 3- The warranty of a wide informative data base to solve problems.

4- Raising up the level and efficiency and the effectiveness of the art activities in production and services.

5- Guaranteeing the fundamentals of the right decisions in all the fields.

Depending on what was mentioned, there could be a continuous growth of the information economy and the increase in the productivity of information; referring all the matter to IT which is going to be the field of interest of the second point.

3. The notion of IT

Technology is considered old, modern and the basis for the future because they are a combination between knowledge and machinery through which the idea turns into a machine that helps the human being in life. Then, the human needs evolve which entails developing the machinery and the usage (Diamant, 2017).

From what was previously mentioned, IT could be identified through:

First Definition: it is all the appliances and programs which are used in preparing, storing and restoring information (Nikoloski, 2014).

Second Definition: it is all the means, appliances and equipment that the human being has used in processing information. This includes processing, recording, concluding, transmitting, organizing and retrieving (Cuff, 2014).

Third Definition: it is the application of technical and scientific knowledge in processing information in the sense of producing, formulating and retrieving automatically (Raju, 2015).

By the previous definitions we can conclude the following:

- a) The development of the notion of IT from one age to another in order to make dealing with the different information easier.
- b) The current image of IT consists of three basic elements which are: computers with their enormous capacity to store and their huge speed in preparing and retrieving, far-range communication technology with their ability to go beyond the geographical borders, and micro appliances with all their footage and flash forms and their great potentials to provide the needed space to go through documents*.
- c) IT is divided into sections; the thing that will be in the centre of the coming chapter.

3.1 IT Categories

IT could be categorized in the following sections:

- a) Technology of producing information tanks of whatever form they might be (Brynjolfsson & Hitt, 1995).
- b) Technology of preparing and retrieving information in their shapes (Wang, Ouyang & Yao, 2003).
- c) Technology of communicating and exchanging Electronic Data (Sekhar, 2010).
- d) Technology of producing datum or information themselves, which are the technology of the labs that basically support the human senses and his ability to observe the astrological, geological, physical, chemical and physiological phenomenon (kim & Tamer, 2005).

3.2 The Nature of Information Technology:

From age to another, the concept of information technology has been developing in order to make dealing with different information easier. The modern picture of this age now consists of three basic elements which are (Chaharbaghi and Willis 2000):

- Computers with all their massive capacity of storing and huge speed in setting up and retrieving information.
- Outrange communication technology and their ability to overrun geographical boundaries.
- Micro-tech appliances of all filming or flash forms and their outstanding ability to provide the needed space to store documents.

information technology could be divided into:

- producing information porters which set up and store information
- Communication technology through which data are sent and received.
- Producing data and information.

The most important information technology appliances are computers, digital technology, the Internet and especially Emails services, protocol of transferring files, Telnet and the service of the agent and the client (Peng & Gan, 2014).

3.3 Information Technology and Its relation to Scientific Research:

- 1) using and utilizing E-information on a large scale in the modern age because they provide the researcher with a chance to get highly accurate information and to control the enormous and increasing amount of studies which are done to get information; the thing that makes it easier to accomplish researches in the best way (Vallance, 2007).
- 2) The variety of resources for E-information; like specialized DVDs, collective resources, specialized collective resources, interior and exterior data, commercial resources and so on (Kenchakkanavar, 2014).
- 3) In the Islamic World there are various problems in dealing with electronic resources such as indexing, categorization, exploration, providing, in addition to information control and many others (Hosseini, Ramchahi & Yusuf, 2014).

4. IT Relation to Scientific Research

The relation between IT and scientific research appears in the reasons why we use Electronic Information, the thing that has resulted in turning to use electronic research resources which are not free of difficulties that hinder the perfect usage of the research process. This clearly appears in the following:

The Reasons for Using Electronic Information:

Using Electronic Information in this age has become a vital necessary for the following reason (Renwick, 2005)

- 1) The problems of traditional paper publishing which is represented in the increase of cost in the cost of producing and manufacturing paper, the lack of raw materials used in paper manufacturing and their negative effects on the environment, the storage and place problems of paper plus their possibility to rot and lacerate.
- 2) The modern researcher requirements of the rapidity in getting information in order to accomplish his/her research works which can no longer be delayed.
- 3) Computerized information resources minimize the efforts made by the researchers or by those who provide the needed information for them. This is because reaching the traditional resources and

the information which is there needs a lot of efforts and procedures; unlike the computed resources which cut short a lot of these efforts and procedures.

4) Computers along with their attachments of equipment and devices help control the enormous and increasing quantity of information. They also help storing and processing them in a way that makes them easy to retrieve.

5) The ultimate accuracy in obtaining computerized information. Computers do not suffer from tiredness and exhaustion when using them for long and frequent periods of time; especially when compared to the person who is looking and searching for information.

Conclusion:

The research has dealt with the role of Information Technology in the scientific research of Islamic Economics, and in it:

First: the research has concluded the importance of using Information Technology in scientific research through:

1- The reasons to use Electronic Information because they save money and time and provide the accuracy of information.

2- The variety of the Electronic Information sources between the environment of the usage and the objective coverage along with access points and methods to reach information according to the providing points and databases.

3- The wide spread of electronic publishing and its variety of periodicals, books, magazines, manuals, dictionaries and lexicons and so on.

Second: researchers face many difficulties in dealing with electronic sources, most important of which:

1- The similarities in choosing the names and the symbols specified to the addresses of the site on the Internet can lead to problems during the usage or during accessing to other sites, in addition to the failure of the user in accessing the desired site.

2- The psychological aspect which is the problem of the scientific acceptance of the electronic form of Information sources by some scientists and researchers.

3- Lacking the unified standers and scales to deal with electronic sources.

Third: making the perfect use of IT is done through a research work team in the field of Islamic Economics through;

1- Choosing the members of the research work team of all the theoretical and applied specializations in Islamic Economics.

2- The aim of the team is to develop the Islamic Economy both theoretically and applicably.

3- The work team fields of work are;

- Formulating the collective theory of the Islamic Economics.
- Developing the specializations of Islamic Economics.
- Empowering the institutions of the Islamic Economics to face the effects of Globalization on the countries of the Islamic World.

The sober scientific research is one of the main pillars for development the research institutions and universities.

Recommendations:

_ The need to support for scientific research funding (annual) and development (long-term) to spread the culture of industry knowledge and harness energies research underlying available in the university to enrich competitiveness in strategic fields.

_Adoption a comprehensive legal framework through thumbnail decades of Saudi universities guarentee the completion the stages of scientific research effectively and compatible with manual of organized regulations, rules and procedures for support the researches

_Encourage the researchers by universities to process the scientific papers which involved in scientific conference after the final publication of researches.

_ Strict adherence to the ethics of scientific research at the highest level and work within the instructions of Islamic law and the strategies of Saudi universities in the implementation of scientific research.

_ Encouraging faculty members and especially new ones to carry out competitive scientific research in cooperation with scientific institutions in the Kingdom and abroad.

_ Enable graduate and undergraduate students to participate in scientific research as a nucleolus for the construction of trained mountain of researchers.

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Investigation the Contents and Components of Islamic Architecture in Contemporary Housing in Amman _ Jordan

(Case study of Al-Zuayter's House of Architect Ayman Zuayter)

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Abstract:

the research turn towards the local architecture to investigate and study the Islamic components and contents of Islamic architecture. Therefore, the research based on the presentation and analysis of one of the projects of Jordanian architect (Ayman Zuayter), who is considered one of the most prominent pioneer who dealt with Islamic architecture in Jordan from the design side on the one hand and from the intellectual and moral side on the other. The study will be based on analysis the study status in many sides, the most important is examination the hidden moral aspect behind the using of design components and link it with the contents of Islamic architecture. In addition to the above, the study seeks to understand the actions of architect and investigate his achievements in the Islamic architecture and its relevance to and respect for heritage and the environment in order to find ways and methods to help the application of Islamic architecture and contribute to the consolidation the boundaries of Islamic architecture identity, and will be based on the method of criticism and analysis in the processing of quantitative and qualitative information according to descriptive and analytical approach.

Keywords: Islamic character, Housing, Al-Zuayter House, Human, Social side, Islamic contents, Privacy.

1. Introduction:

Architectural production is the mirror of the cultural changes of society throughout history, where the sudden western difference of architectural and urban orientation was observed in the last century as a result of many Western philosophical ideas in the impact of cosmic changes on architecture, (Abu Al-Haijaa, 2011) . As for the urban fabric in contemporary Arab cities, it taken on an architectural character that does not suit the traditions of its societies and the values that its religion calls for, the buildings have become disjointed and poor for many Islamic values such as privacy, freedom of speech and so on, pehaps due to the transfer and imitation of Western architecture, which in not line with Arab traditions and ideas and the desire to keep abstract of the times in various ways without sufficient awareness of the causes of this crisis, in addition to the other factors such as the media, and the exchange of cultures, and technological progress in the building materials. This effect reflected on the urban fabric in Jordan at the end of the twentieth century and the beginnings of the Horn of Twenty-first, where the architectural styles mixed between intellectual multiple currents and schools. So of them what was influenced by modern style and it was his traditional style, the majority of architectural styles are not belonging to any architectural style (Abu Ghneima, 2005). It was for this difference random effect in blurry of architectural Islamic identity features not to mention to the architectural Jordanian identity.

The result of what foregoing appeared the urgent need to attempts to draw the features of architectural, Islamic identity by linking to local architecture, and of the pioneers of this attemot the engineer (Hassan Fathi), who turned towards the simple formations to create a social architecture which help people for the co-existence and communication for being within the framework of their heritage and their habits, so he try to integrate the environmental, urban and architectural characteristics in the harmoious form with each other. As for other architects such as (Rasem Badran, Abdel Baki Ibrahim, Ayman Zuayter, Qahtan Awad and other, who their focus was on reconstructing the architecural and urban vocabulary to suit the requirements of the modern

environment. In general, architects participated together in same the approach based on the Islamic rule with its intellectual, social and formal contents in the combination among contemporary and history to produce a contemporary, modern and unique building, away from coping the forms and vocabulary of previous generation (Abu Al-Haijaa, 2011). In this research we will focus on the analysis and documentation one of the architectural actions of the architect (Ayman Zuayter) as a successful example of Islamic contemporary dwelling. Whereas will be study of the extent of its link to Islamic architecture in term of different moral and design aspects through the distribution the blanks and used materials and others. In addition will be study the effect of the environmental and cultural content on design for highlight on successful attempt of attempts of revive the Islamic architecture of architect (Ayman Zuayter) to guide the future policies which enhance the revival of Islamic values in order to participate in determining the features of architectural Islamic identity.

2. Research Importance:

The importance of the study lies in the attempt to derivation the style of architect (Ayman Zuayter) in reviving Islamic values through his standard designs specially Dar Al-Zuayter, in terms of how to use standard Islamic elements and vocabulary within the traditional normative environment, as well as to examine his success in adapting with cultural and environmental content through using these standard elements and vocabulary, thus paving the way for the attainment of specific elements and criteria for a standard method that applies Islamic architecture through appearance and substance.

3. Research Methodology:

The research methodology depends on providing a depth understanding of the architect Ayman Zuayter' actions and analysis of the content of the special study case for Al-Zuayter' House. Will rely on style of criticism and analysis in processing the quantity information according to descriptive and analytical method as a study one for highlight the various aspects which be studied in terms the architectural formation and enhanced values and use the architectural traditional elements and how they relate to Islamic architecture concept. The research methodology depends on the use of

multiple methods to achieve its objectives, including: scientific ethics which related to the architect Ayman Zuayter and his architectural action, and method of study the case, in addition to the use of other means such as field visits and direct observation and personal interview in order to understand his ideas and the ability to apply them on reality to produce results about the positivities and negativities of this use and its relevance to the concepts of Islamic architecture.

4. The concept of Islamic architecture:

The Islamic architecture is the architecture derived from Islamic values and teachings that is not subject to spatial or temporal determinants and is not that subject to to the formal and plastic construct which determined by geographical determinants and temporal periods as orientalist see. Whereas the Islamic architecture back to the architectural heritage in purpose of the measurement no the extraction and is committed to content with the central curriculum socially and economically and in accordance with the environment with its dimensions of natural and cultural. Although Islamic architecture is a unitive factor for different Islamic cultures, we find that every building of Muslims is not necessarily Islamic in its content as a result of the influenced by the superficial and formality concept of orientalist as mentioned above. Muslims architecture is the architecture of the Islamic society, which reflected the cultural values and living requirements in any place and time. Hence, the Islamic perspective of the architectural theory is a social perspective (Ibrahim, 1986), and the fact that social prespective links with human and with everything related him of psychological or physical needs, so the research focused on housing because it is the human environment which forms the society and when this environment be healthy that leads to healthy social environment.

5. Islamic architecture in Jordan:

" Muslim architecture is a local architecture based on Islamic contents " (Ibrahim, 1986), thus, through research into the Islamic architecture of Jordan, it is necessary to touch on the circumstances which surrounded and influenced the local architecture, In the stage of the spread of the concepts of modern architecture in the world, the majority of architects in Jodan specially in Amman turn to apply the modern architecture whether by good way or bad, which led to the production contaminated urban environment, so the building were not take into account the physical or mental



needs of society. This environment led to a gap between the architect and the problems of society and thus production housing away from the humanitarian and emotional needs of comfort, tranquility and stability, in addition proximity to surface aspects as interest in the plastic side. The adoption of the modern concepts and desire to keep up with rapid the fashionable change, led to widening the architectural humanity gap, so rising initiatives featured in seventies and eighties by architects of different architectural schools, so they contributed to provide the different designed solutions to solve the problems of architectural buildings in general and residential building in particular. And thus formed variety architectural experiments which affected in the Amman city with urban fabric which proportionate with local community and with available local materials of stones which hired in architectural, traditional and contemporary way (Abu Ghneima, 2005). Among of successful architectural experiments like of Jafar Toukan, Rasem Badran, Ammar Khammash, and others, who are participated in attempt for back form the architectural and cultural vocabulary in way which harmonized with modern environment requirements with based on Islamic contents for mix between modernity and imitation for production special contemporary and architectural buildings. We saw that the majority of those architects have go towards the dealing with Islamic architecture in general through hiring them in design the general buildings on opposite of the architect Ayman Zuayter who adopted the social side of Islamic architecture and employment it in design housing specially like Al-Tabbaa Villa, Deghani Villa and Al-Zuayter House and others (Abu Al-Haijaa, 2011).

The search turned towards the Housing as a architectural model which most closely from human, it is the variable part historically for compatibility with environmental and social variables. The Housing is the place which the family residence in and is the place of their growth mentally and physically, therefore the relationship between dweller and Dwelling it is firm relationship and we are worth mentioned that this relationship has weakened age variables, and with stay away from the architectural heritages, so the affiliation of individuals to their homes became little, and became it easy to sell and buy the housing every now and then. All this has had a profound impact on the architectural production of the Housing in particular and in the city's façade in general. Nevertheless, some attempts are still alive to restore the close relationship between Housing and the dweller by taking advantage of the traditional architecture based on Islamic deep-roots in contemporaneous to produce a product compatible with current human and the most prominent example was the building

of Al-Zuayter House is the work of the architect Ayman Zuayter in 1984. (Abu Ghneima, 2005), because Al-Zuayter House is the family home of the architect, we see his personal and design experience more freely, which produced a successful home that achieved Islamic content in modern and successful manner.

6. Vocabulary and elements of traditional Islamic architecture:

Elements of Islamic architecture are the development which produced by the using elements from previous civilizations in new ways in order to develop new vocabulary and distinctive concepts associated with the spirit of Islamic architecture and give them the privacy of their own splendor such as: entrances and gates, windows, suns and luminesces, contracts, domes, balconies, muqarnas, courtyards, and minarets (Abd Aljawad, 2010). Taking advantage of the Islamic elements mentioned with the attempt to address all aspects of the building will be analyzed the study case (Dar Al-Zuayter).

7. (Dar) Al-Zuayter (House):

Al-Zuayter House is the home of the architect Ayman Zuayter 1984 , (Abu Ghneima, 2005) it is a family house of architect, and it consists of four floors and a ventilation floor, which divided into four integrated residential houses. The house designed in a manner consistent with the slope of the land in a way that enables the architect to create a variety open spaces from the courtyard and balconies overlooking for each floor, which indicated and emphasizes the interest of the architect to create places for social interaction between the families of the four houses in spite of the high privacy of the four houses.

7.1. Analysis building of Al-Zuayter House for the extraction the contents and elements associated with Islamic architecture:

A. Architectural Formation:

The site's privacy and designer's desire to create open spaces had an effect on the architectural formation. The slope of the site affected the shape of the building (Fig. 1). In addition to the effect

of the designer's to create open spaces through design the projection like (U) (Fig. 2).



Fig.1: Snapshot of Al-Zuayter House clarify

The blocked formation of house.
U).

Source: Aga Khan Foundation.
Arc. Ayman.

B. Entrances:

The entrances of House are characterized by privacy, the architect allocated an entrance to each residential house in a matter that achieves the complete privacy of each dwelling and in a matter consistent with the formation the building and the slope of the earth. As a result of what mentioned before, we can observe using of architectural concepts such as respect the site and adapt to the slope, and using the architectural conglomeration for achieve privacy and environmental affiliation(Fig.3)

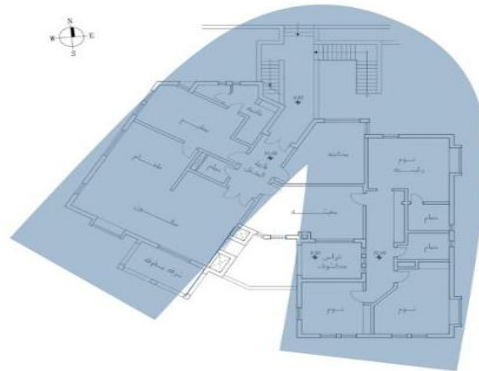


Fig.2: Snapshot clarify the

Design the projection like (

Source: Taiba office of

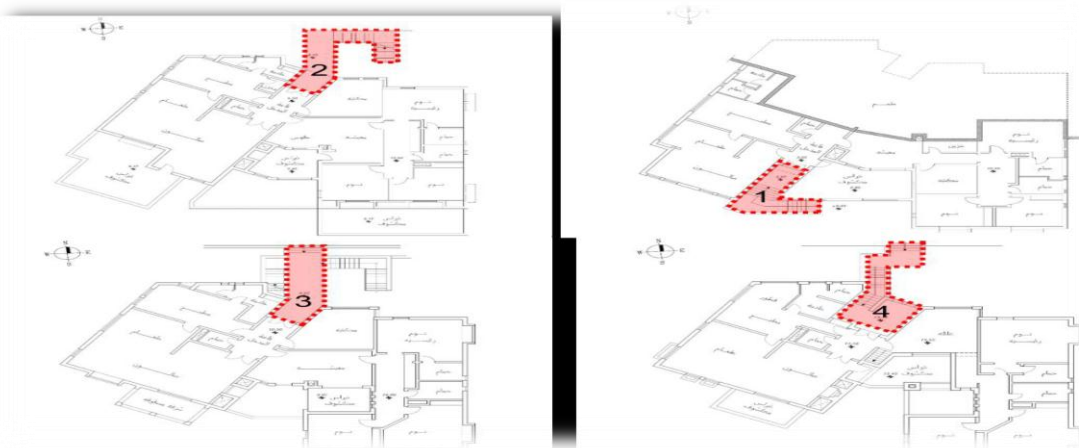


Fig. 3. A picture combine the conjections of four residential houses and the separate entrances for each house.

Source: Taiba office of architect Ayman Zuayter.

C. The slots:

The interest of the architect in the principle of privacy was clear in the above and therefore reflected this interest in the treatment the opening where he turned towards using the oriel in a more modern way, which is illustrated by the following:

- **Slots of the external blanks:**

Based on the awareness of the role of oriel, whether its social role in providing privacy or its environmental role by controlling in natural lighting and ventilation (Abd Aljawad, 2010), so we can call the wood cover of the external balconies called the oriel, where it succeeded in achieving its function. We are worth mentioning how the architect used this element in a modern style, whereas we notice that the architect stayed away from using the oriels in old form which filled with decoration but on the contrary he used the form of simple grid. (Fig. 4).

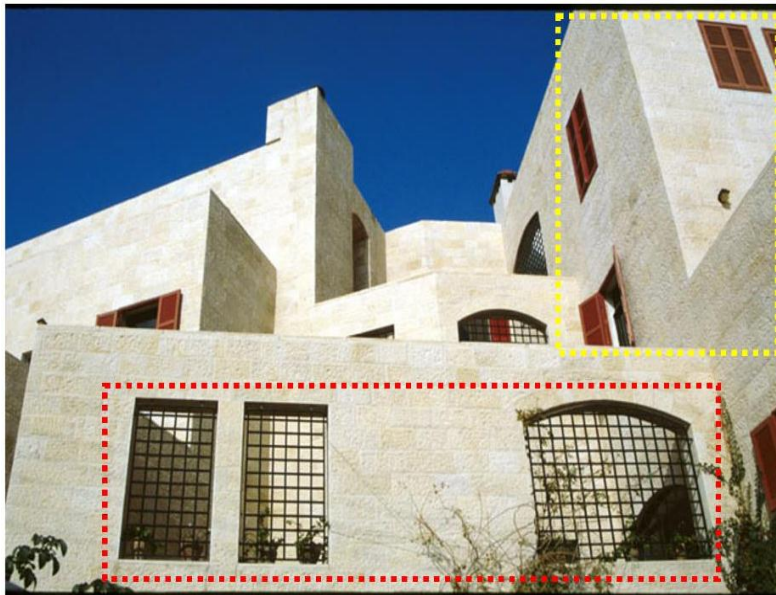
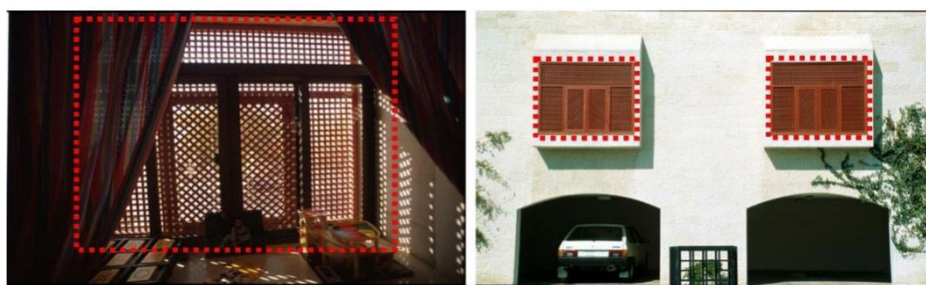


Fig. 4. A picture showing the simple form of oriel and the distinction between the oriel of external blank and oriel of internal blank.

Source: Aga Khan Foundation.

- **Slots of internal blanks:**

The architect used the Islamic element " oriel " in a simplified form in covering the internal blanks as well, and this using was successful, the oriel achieved its social and environmental roles. (Fig. 5)



and outside the blank.

Source: Aga Khan Foundation.

It is worth noting that the architect turned towards to distinguish between the oriels of internal blanks and the oriels of open blanks, so it is possible to distinguish between both blanks of external shape of the building. This brings us back to the Islamic and traditional architecture whose blanks could be distinguish by the shape of the slopts and ceilings.

D. Internal Function:

We note that the division of functions in housing dominated by the Islamic character which interested in privacy, the architect separated the private blanks in bed rooms from others (Fig. 6), in addition to using the blanks of distributor and corridor (Fig. 7). Despite the interests of the privacy concepts, however, the architect did not allocate blanks specially for women and others for men and perhaps the reason is the fact that the culuture of Jordanian community is mix of shyness and open-minded, therefore, the families are still mixed in their meetings (Abu Al-Haijaa, 2011).

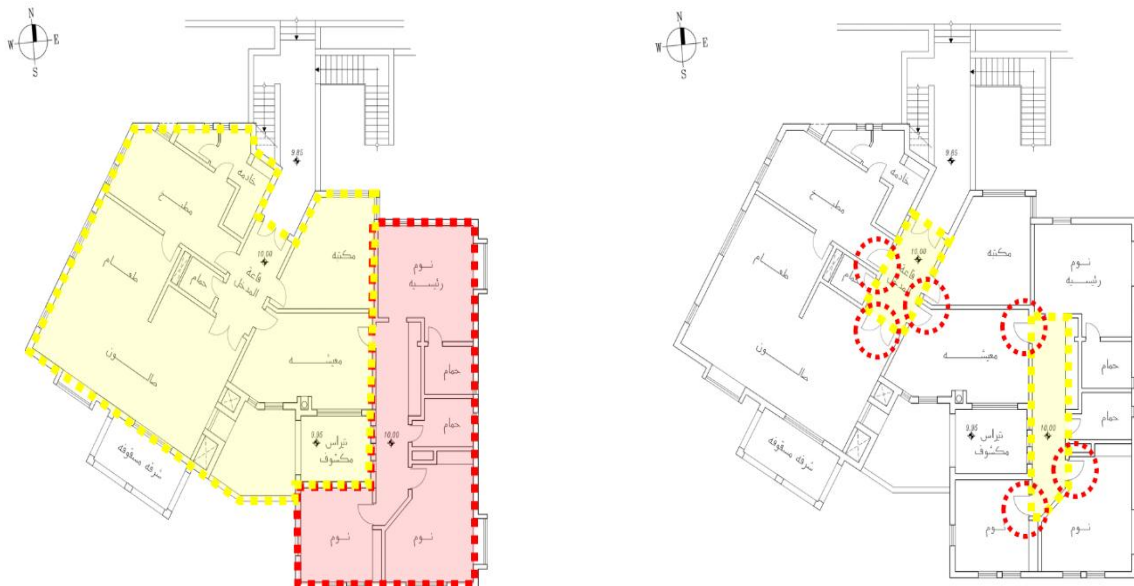


Fig. 6. Grounded projection as an example shows

Fig.7. Grounded projection as an example using the

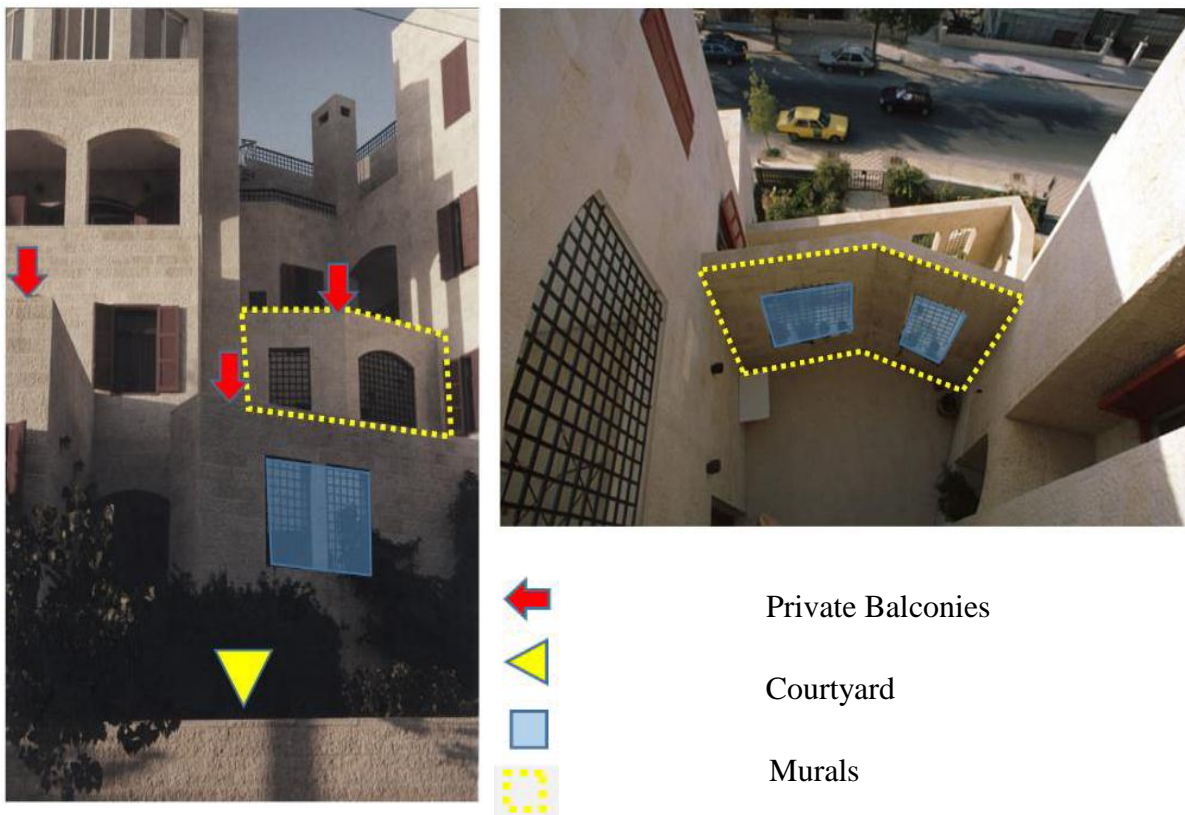
the separation the blanks in bedrooms from others blanks.

Blank of distributor and closed corridor and clarify

Source: Taiba office of Arc. Ayman.

Plots of blanks which overlooking on them.

_ The use of contrast method is a modern method in achieving the Islamic contents and user's comfort, which was reflected by combining between the common blank which appeared in courtyard of the house and separate blanks that provide the full privacy for dwellers which appeared in overlooking balconies, in addition to these uncovered blanks combined between concept of open blank and concept of closed blank through using the murals and oriels in open blank (Fig. 8).



Shots clarify the combination among contractions of open and close – common and private blanks.

Source: Taiba office of Arc. Ayman.

E. Suitability with the site:

Suitability Al-Zuayter House with the site and its slope is one of the most important characteristics that characterize it. (Abu Ghneima, 2005), where the architect took advantage from the slope in the formation four houses with separate entrances and balconies overlooking each other in a hierarchy to create beautiful, contemporary and traditional building at the same time (Fig. 9). In addition, the building simulates the environment and adjacent urban fabric through its using of white stone and wood (Fig. 10). In addition to the above the suitability with the site has an impact on the economic aspect and simplicity

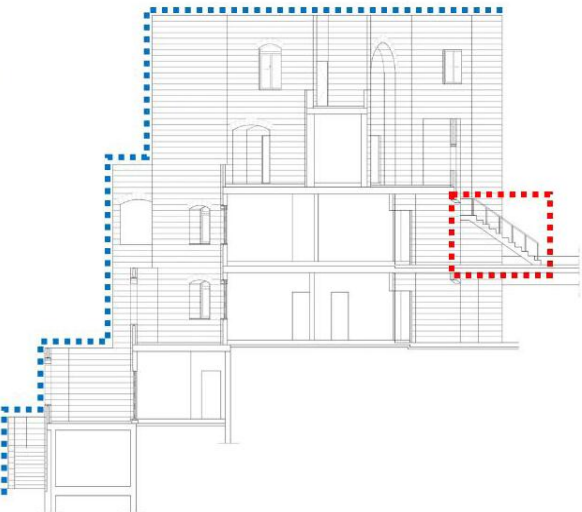


Fig.9. A cross section showing the advantage of the simulation

Fig. 10. Snapshot clarify the the building

slope the site in the architectural block and in chapter of the entrances to residential houses.

the architectural fabric in building materials.

Source: Aga Khan Foundation.

Source: Taiba office of Arc. Ayman.

F. Lighting:

The architect gave a lot of attention to this aspect at night and daytime:

_ **Daytime:** Conglomeration formation has an effect on the sun so that the sun shines the most of the day in a way that shades the open balconies and with the presence of the orials of external blanks the balconie serve to renew and cool the air.(Fig. 11)

_ **night:** The role of oriel in control with lighting has a significant impact on the night lighting of the house, this control is reflected outward so that the wooden oriel holes are manipulated by lighting the external balconies and then breaking the light brightness to light of building. In addition to using of the architect of the yellowish light, which gives feeling of tranquility and warmth, which are the feelings needed in the dwelling of human.(Fig. 12)

In addition to the above mentioned, it is worth mentioning to the effect of light in the creation of architectural body of the family dwelling, where daylight lighting parts and shading othrs and industrial lightning shade the lighted parts in daytime and light the shaded parts, this change and harmony added a formal aesthetic to the building and gave it a countinuous dynamic throughout the day. (Fig.11 , Fig. 12).

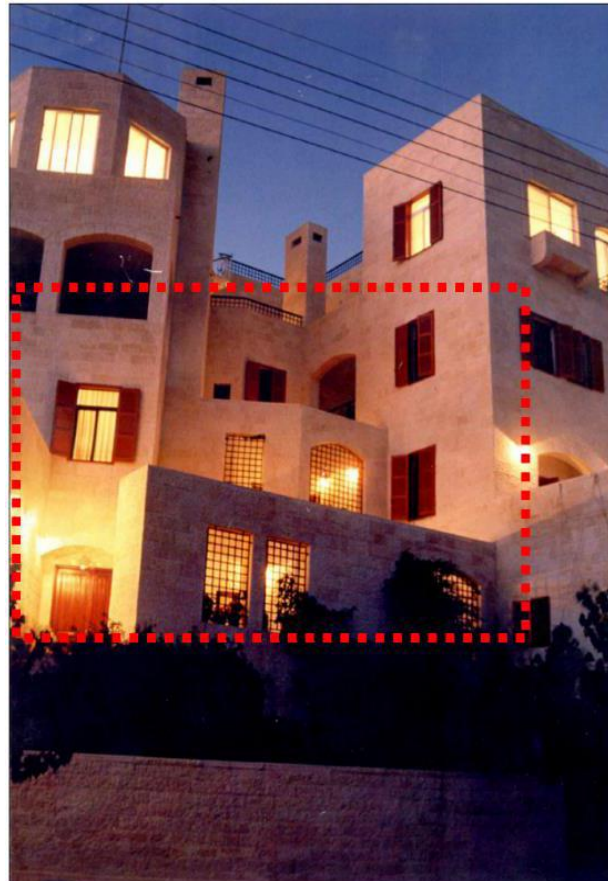
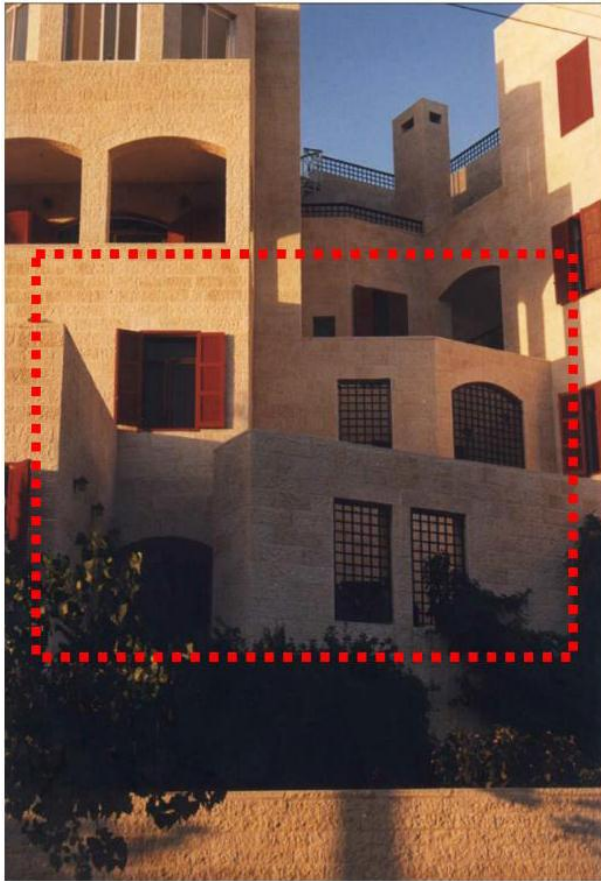


Fig.11: Day snapshot showing refraction of daylight and shaded balconies.

source: Taiba office Arc. Ayman.

Fig.12: A night shot showing the role of oriels in optical manipulation and light the shaded blanks during the day.

9. Summary:

In the previous analysis, the style of the architect Ayman Zuayter appears in his application of Islamic architecture, his using of the ancient Islamic elements appears in a contemporary and modern style, such as:

- Oriels.
- Courtyards
- Balconies

In addition to the Islamic style effected in architects in the internal division of the separation of special blanks and common blanks by using closed corridors and destributed blanks, as for the Islamic contents which described in the studies (Ibrahim, 1986), the house succeeded in providing several of them:

- Functional
- Privacy
- Social intraction
- Suitability with the site
- Simulation of adjacent urban fabric
- Simplicity
- Economy and keep away from extravagance
- Dynamic of building
- Highlight blanks from the outside
- Take advantage from natural lighting and ventilation
- Provide comfort, tranquility and warmth for dweller

10. Results:

- 1) Islamic architecture is a local architecture based on Islamic contents, therefore, the variables which affecting in local architecture it will necessarily affect in the Islamic architecture and its concepts.
- 2) The idea of Al-Zuayer House was based on provision residential houses with high-privacy within the same space.
- 3) The projection (U) is a support in the formation the uncovered blanks that are characterized with privacy for each floor.
- 4) Respecting the site help Al-Zuayer House in the internal division and external formation, in addition to help in acieve some of Islamic contents, for example, the suitability with environment through block gradation and privacy, and through of separation the entrances of residential houses.
- 5) The success which is achieved by architect in using the oriel element in internal and external blanks, and which enriched the use of this element in Jordan and gave it a new elegance.

- 6) The architect's focus on the achievement of privacy has been reflected in several ways such as the separation the entrances, using the oriels for internal blanks, using the murals and oriels in the external balconies for each floor, the internal division by separating the general blanks and private ones, also through using the closed corridors and blank of distributer.
- 7) The architect used the concept of modern contradiction in providing the comfort and the necessary privacy for the dwellers.
- 8) Manipulation with sun refraction and using the yellowish light in external balconies have created dynamics of building.
- 9) Modulating the dynamic light of building from mere family house architectural body decorate the site.

11. Recommendations:

- a) Architects take advantage from modern architectural experiences such as the Al-Zuayter House in order to continue the contemporary development of Islamic architecture.
- b) Continuous in analysis the buildings with Islamic character in order to establish the contents and objectives which associated with Islamic architecture to become good standards for all time and place.
- c) The need to write down the hidden design goals by designer architect to enable cumulative development on these goals.



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The Impact of Social Media Marketing Strategies On Consumer Purchase Intention

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Abstract

Social media started as a tool for entertainment in the beginning, then became used in marketing because of its remarkable advantages in business domain. In this paper we will talk about the concept of social media, social media marketing and, the strategy of the social media, the advantages and disadvantages of using social media marketing, the concept of the consumer purchase intention, and the effect of social media marketing strategies on consumer purchase intention.

As the development of internet technology and the improvement of e-commerce market, online shopping becomes a brand-new individual consumption pattern for buyers and receives a growing number of attentions from public. This prompted me to write this paper.

Keywords: Social media, Social media marketing, Consumer Purchase Intention, Strategy, Network.

1. Introduction

Social media was beginning as a tool that people used to interact with family and friends, The Internet and social media has made it possible for one person to communicate with millions of people around the world. Social media is a set of internet applications that build on technological foundations of web sites such as Facebook, twitter, what's app, YouTube, telegram, linked in and snapchat, and allow the creation and exchange of user generated content.

The advantages of utilizing traditional marketing are; the tangibility of the marketing materials, the possibility of face to face interactive selling and the short-term results that come quite fast i.e. through a promotion campaign (Souza, 2012). The advantages of using SMM are that it is inexpensive to use as most social media platforms do not cost and possibility to engaging a two-way communication with the client, on time, place, media and cost (Hausman, 2012). Social media marketing is also measurable through Google Analytics and Facebook insights

The disadvantages of traditional marketing is hard to measure as the link between a billboard commercial and a final customer is not obvious and cannot directly be measured. Traditional marketing is also expensive as a commercial spread at a magazine might cost a lot. And a low response rate as the marketing is often “forced upon” the client, one-way communication with the client as the clients cannot give direct feedback from advertisements. (Souza, 2012)

The disadvantages of social media marketing are that It requires the clients to be present on the social media platform; if the client is not using the social media platform then there is no possibility to reach the client, it needs a long-term strategy and a focus on creating relationships with customers, so the results take longer to be visible. It is very time consuming to keep social media updated and connect with the clients. (Souza, 2012)

Social media used because it time saving and effort, there are many of marketing websites such as Alibaba, AliExpress, jolly check, amazon, and the millions of people are using Facebook, twitter, what 'Sapp, YouTube, telegram, LinkedIn and snapchat.

2. Social Media

2.1 The concept of social media

Social media is a computer technology that simplified the exchange of information and ideas and the building of virtual reality and communities removed spatial and time constraints that deep-seated in traditional methods of communications, the online tools enable one to many sharing of multimedia content; and employ easy to use interfaces that enable even non-specialists to share and connect. (FOTIS, 2015)

2.2 The types of social media

Social Media classified in: (Laksamana, 2018)

- 1- social networks micro-blogs,
- 2- Media sharing networks (photo and video sharing sites)
- 3- Blogging and publishing networks. (WordPress, Tumblr, Medium)
- 4- Social shopping networks. (Polyvore, Etsy, Fancy)

5-Discussion forums (reddit, Quora, Digg)

- 6- Bookmarking and content curation networks (Pinterest, Flipboard)

3. Social Media Marketing

3.1 The concept of Social media marketing

Social media marketing is a new trend and fast-growing way in which business activities are reaching out to target customers easily. Social media marketing can be simply defined as the use of social media channels to promote a company and its products.

3.2 social media marketing strategies

Here are the seven steps to create a winning social media marketing strategy in 2018: (York, 2018)

-Create Social Media Marketing Goals That Solve Your Biggest Challenges

creating goals is very important to the first part of your social media strategy. At the same time, it's best to set goals that you know are realizable.

- Research Your Social Media Audience.

Initially you should have a goal in mind for your social media marketing strategy, then your brand should look into the demographics of your most valuable social channels.

- Establish Your Most Important Metrics

Engagement metrics sometimes paint a better picture, such as Reach: Post reach is the number of unique users who saw your post; Clicks: Tracking clicks per campaign is essential to understand what drives curiosity or encourages people to buy; Engagement: The total number of social interactions divided by number of impressions (how well your audience perceives you and their willingness to interact); Sentiment: Did customers find your recent campaign offensive? What type of sentiment are people associating with your campaign hashtag? And Organic and paid likes: More than just standard Likes, these likes are defined from paid or organic content.

- Research Your Social Competitive Landscape.

The simplest way to find competitors is through a simple search on search engines Look for the most valuable keywords, phrases and industry terms.

-Build & Curate Engaging Social Media Content.

we recommend creating content that fits to your brand's identity.

- Engage with Your Audience & Don't Ignore.

-Track Your Efforts & Always Improve.

3.3 The advantages of using social media to market your business

Using social media in marketing field has various advantages: (DeMers, 2014)

1-Increased Brand Awareness

Social networks are one of the most cost-effective digital marketing methods used to standardize your content and increase your business visibility. Implementing a social media strategy will greatly increase your brand recognition, as it will engage with a wide audience of consumers.

2-More Inbound Traffic

Marketing your business on traditional way, is limited to your usual customers. Without utilizing social media as part of your marketing strategy, you'll have much more difficulty reaching anyone outside of your loyal customer circle. The people familiar with your brand are likely searching for the same keywords you already rank for.

3-Improved Search Engine Rankings

Search engine optimization (SEO) is very important for realizing higher page rankings and obtaining traffic to your business website.

4- Higher Conversion Rates

Social media marketing allows your business to give a positive impression by sharing content, commenting, and posting statuses on social media, it personifies a brand.

A. 5-Better Customer Satisfaction

Social media is a communication and networking programs. Creating a name for your company through these platforms and programs is very important in humanizing your company. Customers appreciate knowing that when they post comments on your pages, they will receive a personalized response rather than an automated message. The ability to acknowledge each comment shows that you are attentive of your visitors needs and aim to provide the best experience.

6- Improved Brand Loyalty

developing a loyal customer base is One of the main goals of businesses. Considering that customer gratification and brand fidelity typically go side by side, it is important to regularly engage with consumers and begin developing a bond with them. Social media is no limited to introducing your brand's products and promotional campaigns. Customers see these platforms as a service channel where they can communicate directly with the business. Customer satisfaction and brand loyalty both play a part in making your business more authoritative

7-Cost-Effective

Social media marketing of an advertising strategy is possibly the most cost-efficient part. creating a profile and Signing up is free for almost all social networking platforms, and any paid promotions you decide to invest in are a relatively low cost compared to traditional marketing. Being cost-effective is advantage for social media marketing because you can see a greater return on placement and retain a bigger budget for other marketing and business expenses.

8-Gain Marketplace Insights

marketplace insight one of the most important advantages of social media. Using social media as a complementary research tool can help gain information that will help you in understanding your industry.

3.4 Social Marketing Disadvantages

There are five main disadvantages need to be considered on social media marketing, which are: (Toor, Husnain, & others, 2017)

1-Time intensive

Businesses without a service to manage social networks will find it difficult to compete, social media is interactive, social media marketing needs a significant time finance Somebody has to be responsible to monitor each network, respond to comments, answer questions and post product information the customer deems valuable. (Nadaraja & Yazdanifard, 2012)

2-Trademark and Copyright Issues

to ensure that those providing content through the media outlets are not misusing their intellectual property When using social media marketers should regularly monitor the use of their trademarks and copy rights.

3-Trust, Privacy and Security Issues

Using social media to promote one brand, product, or service can involve trust, privacy, and data security issues. It is important that companies recognize these issues and take appropriate measures to reduce their exposure to responsibility for the collection, use and maintenance of personal data.

4-User-Generated Content (UGC)

Attracting user-generated content into a marketing strategy comes with some risk of legal liability for content created by an individual participating in the campaign, however marketers can take some steps to reduce the legal risks associated with marketing campaigns that involve the dissemination of content generated through the media Social. (Steinman & Hawkins, 2010)

5-Negative Feedbacks

Consumers can create positive or negative pressure on the company and its products and services. This depends on how the company delivers online and on the quality of the products and services provided to the customer. the not satisfied customers or competitors are able to post disparaging or offensive pictures, posts or videos and there is not much a marketer can do to prevent these occurrences. (Ghose & Li, 2009)

4. Consumer Purchase Intention

4.1 The concept of consumer purchase intention

Consumers purchase intentions are one of the primary inputs that marketing managers use to predict future sales and to determine how the actions effect consumers' purchasing behavior. Purchase intentions are often measured and used by marketing managers as an input for decisions about new and existing products and services. Purchase intentions are correlated with predict future sales. (Morwitz, 2014)

According to the theory of consumer behavior, the marketing process is divided into five phases: Need Recognition, research Information, Evaluation of Alternatives, Purchase and Post-Purchase Behavior (Kotler & Armstrong, 2011)

4.2 The impact of social media marketing strategies on consumer Purchase Intention

The most important factors that contribute to the consumer's intention to purchase are the quality of the product, the brand and the advertisement. These factors act as the main reason for the marketing efforts of companies through new means as well as traditional methods where both approaches can help boost their market share. (Hidayat & Diwasasri, 2013)

The results suggest that marketing through social media greatly influences significantly impacts both purchase intention and brand loyalty. It also reveals that purchase intention affects brand loyalty. The social media marketing has a positive effect on the consumer purchasing intention and consumer participation is developed. (Kim & Ko, 2010)

Conclusions

One of the most distinctive ways in which the company reduces its costs is use of social media marketing. Promoting brands, products and other marketing activities through social media does not cost the company so much then. It is widely evaluated as the most appropriate tool for marketing products to the target segment.

Social media emerged as a tool used by people to interact with family and friends but was subsequently adopted by companies that wanted to take advantage of the new, popular way of communicating with customers the power of social media is the ability to communicate and share information with anyone on earth (or large numbers of people) if they use social networks.

online shopping can be defined as a process of sellers delivering products or service to customers, and the elements of information flow, capital flow, that are relevant to delivering process and every links of overall process are finished with the help of internet network.

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Utilising IT and Computer sciences in Higher Education

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Abstract:

It is highly required from the academic institutions to try to put future visions such as IT applications in universities ; the one that is able to respond to the international changes and which sets out from what is given so that people in charge of the educational process can possess the following skills;

Communication skills in reading, writing, listening and conversation, developed skills that contribute to thoughtfulness, criticism and academic evaluation

, an ability to deal with the technical and scientific revolution either in adaptation or practicing, and strengthening the links between the higher education institution and the society by developing special programs like community service programs and playing a role in the civil society movement.

Keywords: Academic institution, IT applications, educational process.

1. Introduction

Currently, we are living in the IT age whereby knowledge is bursting out and information is flowing. Academics, educated people, curious- minded and many others are now standing in row to get the most recent up-to-dates each in their own field of specialization. It seems that the whole world has made up its mind to reconsider the concepts of education, teaching and learning in order to be able to keep up with the global changes. The emergence of the world wide web which is also known as the internet, plus the rapid ways and links to transform information from one place to another and the implementation of all these in all the different fields of life can show the importance of information as a merchandise which we can sell and buy and transfer from one place to another to get the best out of them.

This study emphasizes the significance of reestablishing adaptations in both the patterns and methodologies of teaching which form the basics in our higher education policies at universities in the third world in general and in the Arab World in particular; the thing which requires (Khamees,2003):

- Adapting a new university teaching philosophy which has the capacity to catch up with the ongoing accelerating changes.
- Working on new and modern teaching methodology in the abundance of advanced technological equipment the thing which is known nowadays as Education Technology).
- Building up bridges; i.e. following policies which can set up strong loops between the educational process along with its intros, processes and outcomes on the one hand and the economical and sociopolitical atmosphere on the other hand.

This technological advance has led new ways and methodologies of teaching to emerge rather than the direct traditional kind of teaching. These new approaches depend on applying all the technological advances including computer sciences, satellites, cable tube, the internet, virtual libraries,etc, in order to make learning available 24/7 for whoever and whenever and through a variety of ways supported by multimedia technology with all its components. This will enable the academic structure to be presented in a combination of a written and vocal language, chosen by the users themselves for the particular field, and state and animated visuals, in addition to



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different auditory and visual backgrounds which will all be projected to the learner through the computer. This will definitely make learning both more exciting and fun and able to be achieved with the best efficiency and less effort in the least of time; the thing which will in turn make a better learning capacity.

The efforts which all the countries are paying to activate a learning strategy involving the modern technologies in order to catch up with the advanced states are now on the top of the priorities for any government (Mohamed Mahmud Al-Heilah 2004)

The technology of education could be defined as the organized epistemological structure of research and theories and the practices related to the educational processes and sources, and how to apply them in the realm of human learning, plus a highly efficient implementation of the human or inhuman elements to analyze the system and the process beside studying their problems. It also includes designing processes and finding the sources to the practical solutions of problems, developing them (assessing and evaluation) and how to use, manage and evaluate them to improve the quality of learning and its efficiency to achieve knowledge.

It is worth mentioning here that the use of IT depends on using the e-tools between the teachers and the students and between teachers-students and the educational institution, i.e. exchanging information among them through a highly advanced technology.

It is also necessary to state that the use of modern communication tools of computers and their links and multimedia tools of audio, vision, graphics, research engines, e-libraries and the internet portals help both the teacher and the student to enlarge the network of the teaching and learning process to overpass the limits of the traditional classroom. This can make it easier for the both sides to reach the desired information in the shortest of time and with the least of efforts to reach the largest benefit possible.

This new field of education can create new chances for the both sides of the educational process for a better connection which could represent more flexibility in the teaching line making it more effective and faster as in the adaptation with the needs of this era. This study aims to investigate the level of Utilising IT and Computer sciences in Higher Education.

2. E-Libraries characteristics

Virtual libraries, which are based on the objective and materialistic description of the E-documents can help the teacher and the student get organized and chaptered Information.

E-Libraries enjoy the flowing characteristics as they are (Khamees, 2003):

- Indicative:

This can be noticed in the easiness in extracting the general elements off a document like the author, the publisher, etc, in order to refer to them later.

- Analytical:

Which can be depicted through recognizing the essence of a document by its title, contents list, and subheadings, summary or through a mere scanning of the document by means of intensifying its essence in the form of a briefing or a list of keywords?

- Referential:

This is basically done when using a different document that can refer to the needed one. These kinds of documents hold the referential characteristics of the paper under study, and they generally have the form of bibliographical lists or a references list.

- Teaching by Electronic Technology:

This technology aims at delivering the information to the students with the least effort from both sides in a more exciting and beneficial way. ((Massoun Jibrini 2010)). The significance of these technologies is that they offer:



- 1- *Easy of Access*: which is the ability to get the needed information at any given time and in any given place through the simple strategies of research of any educational data base available.
- 2- *Adaptability*: This is the ability to adaptation in order to fulfill the requirements of students and teachers at the same time.
- 3- *Reusability*: which is the possibility to recompose new educational volumes relying on the contents of previously prepared ones and without the need of any extra effort.
- 4- *Inter- function ability*: which can be identified as the capability of using the educational content through the various podiums of the e-learning systems.
- 5- *Continuation*: this indicates that even within any kind of changing or transformation of the technology dedicated to the construction and evaluation of the scientific or the educational content, it would still be as useable and functional as it used to be.
- 6- *Productivity*: when there is a chance and an ability to minimize both the chronological and financial expenses, we can then call it a good productivity.

Professor Kaseem Mohamed Al-Shnaq has identified some of the aims that could be attained through applying the e- education techniques; some of which are:

- 1- *Reaching the point where any lack in the academic and training staff could be substituted through virtual classes.*
- 2- *E-learning is a major element in publicizing knowledge through any give society plus presenting a wider concept of the ongoing education as a theme.*
- 3- *E-learning is perhaps the best tool to prepare a whole generation of teachers, professors, academics and students which will be capable of handling the techniques and the skills needed in the current age along with all the unprecedented developments that our world is witnessing nowadays.*
- 4- *This methodology will undoubtedly provide an enhanced interactive and multi-resourced environment which will be of a great service to the entire educational process.*



- 5- *Building up the three-phased relation of parents-schools and schools-outer world, and in this particular area we are talking about all pre-university schools of all kinds and degrees.*
- 6- *Exchanging the educational expertise and points of view in addition to purposeful discussions based on what the modern technology can provide of linking channels through the magical www will all lead to the support of the interaction process between teachers, students and assistants.*

3. Additional Benefits for Teaching Using IT:

The additional benefits of utilising IT can be summarised as follow (Al-Mousa, 2002):

- 1- As students have got the capability of an instant reach to information needless to be at any particular time and place, time and place can both be trespassed in the educational process.
- 2- A true chance could be available for both the students and the teachers to create a real interaction between them by using the IT tools.
- 3- A sense of equality could be raised among students through the application of IT techniques. This is because students using these modern means of communication can speak their minds freely and at any time; unlike the traditional classrooms which prohibit such privileges either due to bad arrangement of the hall itself, the low voice of the students or shyness or many other reasons.
- 4- Easy of access to the teacher or the trainer even out of the official work-time.
- 5- Minimizing the managing burdens of the teachers.
- 6- Using more accurate, multiple various methodologies in the assessment procedures.
- 7- The individual uniqueness could be highly appreciated and this will at some point enable them to learn through the methods which fit them, their capacities and their personal speed of learning.

4. Future Higher Education: Practical Recommendations to Develop Education:

a) Performance Evaluation:

There is more than one definition that was presented to define performance evaluation, and most studies shows that evaluation as a process doesn't only aim at judging eventually on what does this employee deserve of grades upon which he might be promoted or to give him a bonus or even to punish him for bad performance at work, but rather aiming at further meanings such as:

1. Figuring out the cons and pros in the performance to strengthen the pros and minimize the cons.
2. Looking into ways of improving the performance in the future.
3. Listening to the others' view points and knowing their directions in the practiced job.
4. Creating an atmosphere of transparency and candor to present new suggestions.

Educational evaluation is one of the most important educational elements; for there could never be any effective educational process related to the teacher and the student inside or outside the class unless it objects its programs and objectives to evaluation.

Moreover, evaluation is a continuous process that is based on standards that have been collectively developed and it is meant to measure the performance of the students and the effectiveness of the teachers plus the efficiency of the program. In the light of what was mentioned, the evaluation of the teachers' board members is done in all the important educational fields.

As a matter of fact, the tasks of the higher education evaluation are associated with a number of basic principles; the most important of which are:

- The principle of evaluating the university from within its philosophical system and goals agenda. This presumes taking for granted the philosophy of the university as untouchable even by the evaluation itself.
- The principle of associating evaluation with development project of the university institution because any evaluation of the current situation would be useless unless it contributes to the improving realistic steps towards the university.

So, the evaluation process, as we have mentioned earlier, must ensure continuity and quality; and this includes several levels, the most important of which are:

1. The Eventual Evaluation: which is an evaluating activity done at the end of the school semesters or at the end of the school year (usually used for a limited period of time).
2. The Constructional Evaluation: which happens during teaching and learning and goes through the educational process to improve and develop it.

3. The Self-Evaluation: it is done reflexively; where the teacher evaluates himself academically through putting measurements of how committed he was to the scientific scale.
4. Methodology Evaluation: here it is important to take into account the feedback that the students show every now and then.

Institutions of higher education and universities had better take into account the following elements:

- Heads of Departments.
- Scientific and consulting Societies.
- Deans
- Testing the content of decisions and the quality of used choices (specialized in educational curriculums).
- The performance of the students in both the partial and comprehensive exams.
- Attempts and initiatives that the members of the teaching board present to try to improve the quality of the performance.
- Serving the society and building up communication links with the outside environment.
- The educational performance through teaching.

To make sure that all these will work and that the evaluation of the performance does its best, precise applications should be designed and distributed to the figures under study in order to fill them out and to study them.

b) Employing technology in research (the internet):

There is no doubt the tools upon which education was depending have become so traditional when compared to the modern tools and methodologies. The following table shows these differences:

Learning stuff in the past	Promising automotive learning tools
Curriculum books and diaries. Students write a direct straight text Samples and materials: Direct notes Learning dreams about reality Teachers giving lectures Students give teachers only what they learn.	Basic resources and materials are done by the stude E-books referred to by multimedia. VR characters and presentation through simulation. Remote tools for observation and notes. VR worlds reacting to experience. So many experiences voices in the class. Students give lessons to the others.



IT technology and especially the Internet could be employed in researches making them interactive due to what they provide of open learning fields. This is done when some experienced persons organize training lessons dedicated to both the teacher and the student where their contents are surfed on a site that it is free to access without any restrictions to a certain geographical zone or a certain nationality. An example of this is the 21st lessons series organized by the university of (Carolina) where every lesson is not more than 3 to 5 pages and which was entitled (teaching officers to use the internet)*. There are now more than 5000 agents around the world and the increase is due to the growing appetite for such lessons. There are a number of reasons for this; the most important of which are:

- The wide range of advertisement of these courses as they include a lot of countries because the advertisement is spread through the Net.
- The fact that there are no time constraints about the place for the actual training.
- The fact that these exercises contain a lot of practical trainings done by the trainee in the time those suits him the best and in the period of time that he finds suitable without any contradictions between the various levels of comprehending.
- All these training courses, of whatever kind, are accompanied with electronic sites by which all the questions, inquiries or even problems that occur during the training could be sent.

In addition to this, many countries like The Netherlands, France and Southeast Asia countries practice this open training for teachers and employees as they enable the researcher to benefit from the following services:

1. Access to the intellectual productions through the Net like the sites of the scientific magazines which use the free service system or the remote registration.
2. Applying digital technology in the field of training, simulation and creativity.
3. Contributing in running the mass discussion and providing the ability to participate in the local and international conferences either by actual attendance or online.
4. Providing information on different sets of devices like digital disks that contain training and educational lessons and lectures.

The modern IT technology enables the researcher to develop his skills by open online learning, independent freestyle learning, home study style, learning by correspondence, self learning style and virtual university system.



In the United States for example, some American universities like (Indiana) are organizing programs that are specially designed to teach managers and make the familiar with the recent updates and about the dealing systems of the foreign markets along with teaching them foreign languages.

The researcher sees that searching through the internet is in need of some coordination that requires certain procedures like:

- Participating in a number of specialized and efficient journals to provide the researcher with the chance to get acquainted with similar fields of knowledge in different countries.
- Taking part in international informatics systems like ESCO which provides scientific, academic and consulting services to the academic institutions.
- Directing the researchers and the students to specialized sites that are accountable in certain competitions for benefit and in order to minimize the time and effort lost due to random search on the Internet.
- Directing the efforts of researchers and those who responsible for evaluation, instructing and training to develop their linguistic skills in the field of living languages and the different methodologies followed in the various kinds of knowledge.

Conclusion:

It can be fairly concluded that using the modern technology in teaching has the ability of making both the students and the teachers interact on a higher level. This utilizing of the modern technology also has the potentials of making all those who are relying on the inventions of the digital revolution able to keep up with all the changes of this speeding modern age where information and data has acquired the speed of light. Much more effort is, therefore required from the both sides of the educational process so that they always step side by side with the unstoppable vehicle of this age.

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