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Information Technology & its relation with Scientific Research at Universities

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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.

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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.

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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

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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.

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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 pro-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.

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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

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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.

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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:

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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:

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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.

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- 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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