Human Resources Use of Information and Communication Technology and Its Associated Challenges

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Abstract - The world today witnesses a great technology progress, where the information and communication sector takes a leading position among the other sectors, and thus the information and communication technology has emerged as a new innovation; as the most important infrastructure of any institution and ~~as~~ an important input to the modern open institution. These technologies also contributed to the development of human resources in the institutions and facilitated the completion process of the functions assigned to them, the rapid growth in the field of information and communication technology gives great opportunities to increase individual and collective effectiveness through applications offered by these technologies, which contribute in improving the competitiveness of enterprises on one hand, on the other hand, and in spite of the opportunities offered by information and communication technology to human resources, it has created many challenges for institutions such as the need for providing training and the working staff should be aware of the importance of information security .

Keywords - Human resources, information and communication technology, training, information security

I. INTRODUCTION

Contemporary human societies are experiencing great cognitive and informational explosion, this led to a revolution and to a technology, and to many variables and rapid successive developments in various areas of human activities, which have made both developing and developed countries and communities making great efforts to make use of the "contemporary information revolution" in order to provide an opportunity to its members to take advantage of it, also technological changes that offered various information technology with all its components, overshadowed over all aspects of administrative work, since we do not find any institution without a database for all its different functions.

The rapid growth in the field of information and communication technology gives great opportunities to increase individual and collective effectiveness within the institution, thereby contributing to the achievement of competitiveness, as the applications that embody these technologies (like thee-mail, integrated management programs, remote collaborative work, the flow of business information and the Internet ... and others) lead to the restructuring of the internal processes, and a radical change in the organization and in the competencies, and in the administration (management) in general.

Despite these opportunities afforded by the use of information and communication technology to the institutions in general and to human resources in particular, but they created many challenges notably the need for human resource awareness about information security as these technologies have had great contribution in speed and ease of the movement of different kinds of information between institution staff making them vulnerable to many risks, and from the above circumstances, the problematic of study is stated in the following question:

What are the most prominent challenges facing the human resources of the institutions in the light of the widespread use of information and communication technology?

And we will address this problem through exposure to the following points:

I. Information and communication technology properties.
II. The importance of human capital in the knowledge era.
III. Information and communication technology and working conditions.
IV. The impact of information and communication technology in the structure and functioning of human resources.
V. The new challenges in the field of human resources management in light of information and communication technology.
VI. Risks of information security related to the human aspect in the institution.
VII. Importance of training human resources in the current technological changes.

II. THE IMPORTANCE OF THE RESEARCH

The importance of this research lies in the following:

➢ The theoretical contribution of this research in addressing the problem associated with the use of human resources for information technology and communication challenges, and demonstrating the importance of the awareness of these challenges, because the use of these technologies at

work does not come effective only by the availability of all the conditions that ensure their proper use.

➢ The majority of the researches in this area have focused on the need to use human resources to information and communication technology and its positive characteristics, and this study is to compliment what was briefly tackled in the other studies on the challenges created by the use of these technologies.

III. RESEARCH OBJECTIVES

The objectives of this research are as follows:

➢ Exposure to the impact of information and communication technology in the performance of human resources and working conditions.
➢ Exposure to the new challenges of human resources in the light of the evolution of the use of information and communication technology.
➢ Exposure to the risks of information security associated with the human aspect and focus on the importance of training of human resources.

IV. BASIC CONCEPTS

A. Information Technology

Information technology is known as: "a set of interrelated terms include information processing methods using the computer and the application of statistical and mathematical methods in solving problems and stimulate thinking through computer software [1].

B. Communication technology

Intended by communication technology: "the overall physical and organizational tools and methods used in gathering information, processing, storage and retrieval, dissemination and exchange, and connecting it to concerned parties" [2].

C. Human Resources

Administrative activities concerning the identification of the project needs of the workforce and providing specific numbers and competencies and coordinate the specific advantage of this human capital to the highest possible efficiency [3]. The human resources function can be defined as a function that take in charge the affairs of the optimum use of human resources at all levels of the institution in order to help achieve the its objectives.

D. Information Security

Intended by information security: protecting and securing all the resources used in information processing, in which the institution secures itself the working staff, the computers used, and the media information which contain the institution data in all phases of the presence of the information (storage - transport - treatment) [4].

V. INFORMATION AND COMMUNICATION TECHNOLOGY CHARACTERISTICS

Information and communication technology been characterized by a range of characteristics, including:

Artificial Intelligence: The most important characteristic of information technology is to develop knowledge and strengthen opportunities of the working staff training for inclusiveness and control in the production process.

Configure the connection networks: all equipment based on the information technology unite in order to form networks, and this is what increases the flow of information between users and industrialists, as well as machinery producers, and allows the exchange of information with the rest of other activities.

Interactive: that is any user of this technology could be the receiver and the sender the same time where the participants in the communication process can exchange roles, which allows the creation of some kind of interaction between the activities.

Asynchronous: means the possibility of receiving the message at any time convenient to the user, where the participants are not required to use the system at the same time.

Decentralization: a feature that enables independent information technology and communications, the internet, for example, enjoys the continuity of work in all cases, it cannot be broken down any one in the world.

Conductivity: means the possibility of linkage made between the various communication devices, regardless of any company or country in which they are made.

Mobility and motor: that any user can benefit from its services during his movement, from anywhere by many means of communication, such as computer, mobile phone.

Convertibility: is the possibility of the transmission of information from one mediator to another, such as transferring audio message to a printed or read message with the possibility of controlling the communication system.

No mass: This means the possibility to control the information where it goes directly from the producer to the consumer, as it allows the combination of different types of connections, whether from one person to one person, or from one side to the groups, or from group to group [5].

Commonness and spreading: the ability of the network to expand to include more and more unlimited spaces of the world gaining strength from this systematic deployment of its flex pattern.

Global: It is the environment in which these technologies operate, where information take in different and complex paths spreading across different regions of the world, which allows capital to pouring electronically given the ease of commercial transactions driven by information capital allowing it to overcome the obstacle of place and move across international borders.

VI. THE IMPORTANCE OF HUMAN CAPITAL IN THE INFORMATION ERA

Many researchers emphasized that what distinguishes the twenty first century is the emergence of the power of knowledge, and how to use it, and how to use it in the knowledge-based organizations, and the importance of knowledge workers (its creators) in the configuration of wealth and power together.

Based on what has been said the development of human resources has become an important factor in enhancing the productive capacity and competitiveness of organizations hence great care has been given to its attractiveness employment training and motivation, as well as the input of accounting human resources has been considered as one of the accounting inputs of the knowledge assets in addition to other inputs like intellectual property and organizational learning and others [6].

The final stages of the twentieth century especially the seventies and eighties stage witnessed remarkable developments in human resources management, as well as the environmental variables witnessed in the current era which were of unique characteristics that were not known at the time, and that affected the human resources leading to an era characterized by the following milestones of the changes and developments:

- Increased attention to human resources management and been given great attention than ever before.
- The developments and changes occurring at that time influenced a large range of policies and procedures related to working staff.
- Remarkable increase of interest in scientific aspects related to performance.
- Focus on the quality of life associated with the workers and the emergence of the philosophy of Total Quality Management.
- Emergence of the phenomenon of empowerment for workers as one of the most important intellectual and philosophical secretions to deal with manpower [7].

These features formed remarkable developments of what shaped the outgrowth of environmental change, whether in the context of the economic, social, cultural and technological aspects…etc., of developments that have contributed effectively to the advancement targeted for the management of human resources [8].

VII. INFORMATION TECHNOLOGY AND WORKING CONDITIONS

Some actors are using information technology to strengthen their independence, but at the same time we notice an increase in the weight and importance of control, whatever was the location of these actors, and the level of control they are subjected to, they are dealing cautiously with these technologies and their belief that they leave effects that can be followed by a posteriori control, and this is what it increases their fears of the effects caused by the manipulation which, they believe that control by these technologies pose a potential threat to them and always falls outside the circles of their influence.

A. Change the place and time of work

The sweeping stream of globalization and the growth of communication networks (Internet, telephone, mobile,...) imposed on institutions greater efficiency and flexibility, the use of e-mail as a means to link the institution with customers or suppliers will lead automatically to reduce the time and to more interactivity, This is not only limited to production periods but also some other functions as ways of display and negotiation ... etc., but in the heavy commercial activities, e-mail can be considered as a worrying more than phone calls (because it requires some time to read and reply to messages ... etc).

One of the main effects related to the environment and working conditions are mainly the increased work pressure and disturbance in the pace of the process of life, which will reflect negatively on a person's life outside of work [9].

B. The overlap between private life and professional life

The overlap between private life and professional life has several effects, including:

- Difficulty of managing professional and family constraints at the same time (time and space limitations).
- Lack of worker personal training on the use of these technologies (the Internet, and business office ...), as most institutions do not provide a basic training for its workers in the use of automated media (keyboard, file management using Windows, writing, word processing, and excel...) institutions offer only superficial training that helps to use

software for special applications which are supposed to be based on a prior basic configuration.

VIII. THE EFFECTS OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE STRUCTURE AND PERFORMANCE OF HUMAN RESOURCES

These effects have reflected on the human resources structures in contemporary institutions as follows:

➢ clear direction to reduce the size of the workforce as a result of the need for fewer workers to perform the same work more efficiently.
➢ Direction to the disappearance of mediator management group specializing in the mediation between senior management and executives categories in different organizational positions.
➢ As well as direction to the disappearance of inter mediators between the institution and its customers or its suppliers, and were replaced by information and communication technologies, such as the supply in time or deal online.
➢ Decrease in the need for workers and middle or non skilled ones who occupy jobs requiring muscular capabilities without the need for mental skills, where new technologies replaced them with more efficiently.
➢ Growing need for new categories of workers with specialized knowledge in computer programming work, and other owners of intellectual skills and mental capacities who are able to absorb new technologies and their applications in management activities and the various institutions work.
➢ Growing need for human resources capable of activating the powers vested in them in contemporary institutions which are headed increasingly towards patterns of working ability in self managed teams [10].

IX. NEW CHALLENGES IN THE FIELD OF HUMAN RESOURCES MANAGEMENT IN THE LIGHT OF THE EVOLUTION OF THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGY

The most important challenges facing the human resources management today can be summed up in the following points:

➢ **Aspirations of workers:** workers looking forward to greater autonomy and more involvement fact which imposes dividing and personalizing human resource management practices.
➢ **Knowledgeable Workers:** The current challenge is to search for qualified individuals who can find answers to the requirements of quality and innovation.

➢ **Knowledge management:** competent and qualified workers have become a new strategy to make up the foundation assets, and therefore it has become a goal of human resource management practices to facilitate the dissemination of knowledge and management.
➢ **Globalization:** The human resource management practices must respond to global and local logic alike, for this, the real problems lie in the management of multi-cultural working groups, and managing the diversity of employees and managing equality between them.
➢ **E-business:** information and communication technology in general and the Internet in particular have changed competition rules, which requires human resource management professionals to adapt these resources and practices with the new rules associated with these technologies [11].

X. INFORMATION SECURITY RISKS ASSOCIATED WITH THE HUMAN ELEMENT IN THE ENTERPRISE

And these risks can be divided as follows:

A. Intended dangers

They can occur during the design of equipment or information systems or through programming, testing, data collection or during the introduction of the system, or in determining the powers of users operations, and these errors constitute a significant proportion in informatics problems faced by organizations [12].

Users represent a security risk for many reasons, for example the limits of institutions continue to grow with the increasing number of its street workers, where their personal and professional use have been converged in the points and terminal centers of the institution in which they work, so computers and laptops have become more personal and filled with applications that are not work-related, and that would exposure the institution to spyware and hackers and other threats programs, and there are also growing dangers looking after curiosity among users in these peripheral centers, and the ways of hacking are in the form of a website in the network, or an email designed to defraud the staff, in order to complete operations which have a significant impact on the organization's security , or the disclosure of confidential information, and what is worse, is that the staff are in a permanent move between competing institutions because these institutions do employ key staff in anticipation of their skills, and also to get confidential information that they bring with them. In sum, the internal threat, whether harmful or not, it is can never be neglected at all and many events showed that workers some institutions stole sensitive information worth millions if they were not billions of dollars, in fact the most

difficult problem faced by the institutions is spyware which more than viruses because it is designed so that it cannot be detected.

B. Unintended dangers

The unintentional violation of the safety and security of the data often results from the wrong and improper procedures ranging from processing procedures and data entry and even operating errors that occur during processing, through unforeseen weaknesses in the application software itself [13].

➢ The majority of staff inadvertently often make incorrect choices when it comes to dealing with enterprise information and data, and example of this is that with the increase in the users using digital devices and personal digital assistants, etc., directors security should remember that these devices were for a long time connected to home old computers which are less secure, and that's what makes it easy for users to download harmful virus unwittingly, or destructive code in a computer institution.

➢ Neglect: and it represents the most common way to break through the information, the reason for this, neglect is due to carelessness and negligence of some workers and weakness of their awareness of the importance of maintaining the confidentiality of information and serious consequences to penetrate the security of information, as well as lack of knowledge of the information that should be protected and who wants to exploit this information from inside and outside the institution [14].

XI. EIGHTH: THE IMPORTANCE OF TRAINING OF HUMAN RESOURCES IN THE LIGHT OF THE DEVELOPMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY

The selection and the right training of human resources and put it in the right place according to their skills and desires, is a guarantee of good and higher performance without direct control, as well as the training and development has several advantages, including increased productivity, and boost the morale of individuals, reducing the need to supervise closely, and reduce work-related accidents, and deepen specialized knowledge of modern technology, and promote the stability and flexibility of the organization.

The training helps organizations achieve self-sufficiency, thereby reducing dependence on foreign expert [15].

Training also aims to:

▪ Educating human resources how to avoid weaknesses in the current performance, especially when using information and communication technology, and

achieving the desired result of properly, and that by bridging gaps in current skills and behaviors in dealing with these technologies.

▪ Teach human resources how to develop strengths in the current performance, to take advantage of them more in the future, in the incurrent knowledge or skills and behaviors in dealing with modern technology.

▪ Giving the human resources new knowledge and skills and diverse behavioral trends, to enable them to perform new works in the future, needed by the organization.

▪ To adjust human resources with changes in the technological environment that the institution has to insert in its fields of work.

The following figure shows an overall vision for the training system [16].

Training System
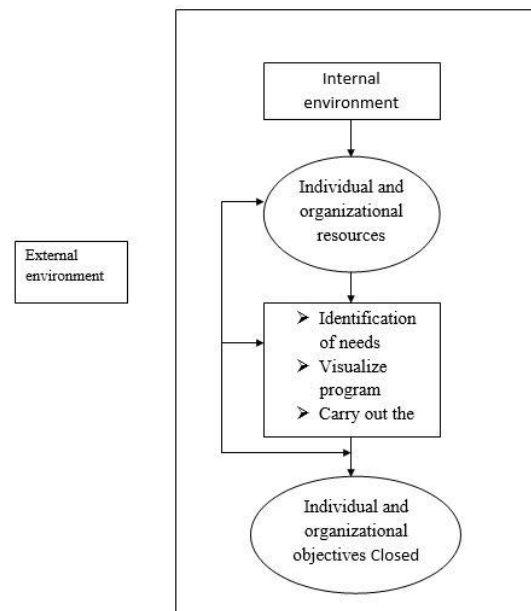
Source :**Manuel de gestion**, ouvragecoordinated by Dayan Armand, editionsellepses, Paris,1999, p442, IN. Brahimi Abdullah, Mohammad Mukhtar, the role of the configuration in the valuation and development of human resources, magazine humanities Biskra, GS 07, 2005, p. 11.

But the success of building a strategy for information security process should take into account the vision and the goals and objectives of the business enterprise, should also not be seen as an afterthought, but must be designed and developed in parallel with the evolution of the system, and any other way rather than this method will result in information security failure therefore identifying any safer effective strategy must be planned well and starting to focus efforts on the enterprise level,

not seen as a technological issue or as dedicated to a specific technological solutions to specific problems combination [17].

XII. CONCLUSION

Through what is already covered in this research we came to the following:

➢ Integration in the era of knowledge impose on institutions the use of information and communication technology because the latter has the features and characteristics which will allow the development of institutions in general and the human resource in particular.

➢ The growing importance of human resource as well as the importance of a very special development in light of the changes that the world knows as a whole and the economic world in particular.

➢ ICT brought about radical changes on the performance of the staff and management of human resources, and created many for them.

➢ Information and communication technologies have contributed to the emergence of information security problems related to the working staff and these problems develop dramatically posing a threat to the institutions.

➢ Technological changes imposed on the institutions the need to train and configure its human resource to be able to continue and succeed especially they live in a turbulent and highly competitive environment.

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