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The Impact of Internet on Libyan Higher Education System: The Context of Cultural and Archaeological Heritage

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Abstract: In this paper, we shall present the impact of the development of ICT and internet on the government organization, education and archaeology, focusing on such contexts in Libya. The number of students enrolling faculties and the number of faculties and universities is increasing. Due to its geographic inconveniences (mainly desert and hard-to-reach areas) the educational opportunities are not the same for all Libyan students. The open classroom program was launched to overcome this obstacle. On the other hand, e-learning is still not recognized as a valid model of education. The paper offers the insight in activities to be undertaken in order to improve the e-learning programs on Libyan faculties and universities. Libya has also launched the e-government program in order to improve the services provided by the governmental institutions to businesses and citizens. The implementation of e-government program is still in its early stages of development. Implementation of ICT in archaeology is also considered in this paper with the reference to the condition of Libya's cultural heritage after the recent civil war, loss of many valuable artifacts and information. In this paper, we reflected on how the implementation of ICT in archaeology can prevent damage and destruction of cultural heritage.

Key words: Archaeology, cultural heritage, e-government, e-learning and ICT.

1. Introduction

The ICT (information and communication technologies) play a significant role in today's daily life, having their impact on all aspects of our living, hence it is now considered to be an integral part of people's lives. The adoption of ICT in different fields has shown success in the developed countries. However, the implementation of ICT in different systems such as governmental, economic, social, cultural, educational, etc. is still in early stages in the developing countries. In order to maintain their competitiveness on the world market, the developing countries should follow the example set by the developed countries and accelerate the adoption of the technology in government, education, business, etc. processes. Such an action requires significant investment by both the government and private sector of each developing country. Libya has started responding to this challenge by investing greatly in the reconstruction of the education system and initiating the national programs to introduce the ICT into education.

Libya offers free education to its citizens, males and females from elementary school up until the university. Post graduate studies abroad are also free for everyone, and the post graduate studies in the country (Libya) are also free-paying and subsidized by the country. Educational institutions such as schools and universities are spread out throughout the country in order to enable and facilitate the access to them and educational opportunities to everyone. A mobile classrooms program was introduced in Libya in 2006, in the aim to meet the needs of the students living in

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distant and remote areas [1].

Libya has the highest literacy rate in the north Africa and middle east world and when it comes to the standard of living, social security, health care and other factors, Libya is at the top of all African countries. Its geographical position enables it to be a leading country on the African continent.

In the midd-1990s Libya high education institutions started implementing improvement processes which led to the change in academic work practice. In the recent years, we have witnessed that the higher education improvement cannot be achieved without engaging the ICT. The applications which can facilitate and improve the high education acquisition are the ones that affect education management and administration and support of teaching and learning [2]. The HE (higher education) institutions and the government should develop an effective strategy for implementation of ICT in the educational system in order to maintain the country's competitive advantage and to keep up with the international standard. In order to do so, the greatest challenges with which the country meets are improvement and development the ICT infrastructure and lack of skilled and qualified teachers.

2. The History of HE in Libya

Higher education in Libya is offered in general and specialized universities and higher vocational institutes. University-level education consists of the following major sections: university education (lasts four to seven years), university vocational and technical education (lasts three to five years) and advanced graduate studies. The education is finance by the state, meaning that it is free for everyone from the elementary school up to university, also post-graduate studies abroad. Post-graduate studies in Libya are not, but they are subsidized by the government. The Open University is the only institution within the public sector which relies to some extent on tuition fees paid by students [3].

The first university in Libya, the Libyan University, was established in Benghazi after Libya acquired its independence in 1951. Its name was the Faculty of Arts and Education. In 1957, the Faculty of Science in Tripoli was established. In the same year another faculty was established, the Faculty of Economics and Commerce. Foundation of the said faculties was followed by the Faculty of Law in 1962, the Faculty of Agriculture in 1966, the Faculty of Higher Technical Studies and the Higher Teachers Training College in 1967, the Faculty of Medicine in 1970. In 1970, the Islamic University in Al-Bayda was integrated into the Libyan University as the Faculty of Arabic Language and Islamic Studies. Foundation of the Faculty of Oil and Mining Engineering occurred in 1972, the Faculty was later on moved to the Brega Oil Terminal Complex. Several higher education institutes for teacher training were founded in 1997. Recently, new scientific institutes known as the Scientific Research Centers were established, these institutions are both educational and research institutions.

In 1973, the Libyan University split into two independent universities: The University of Tripoli and the University of Benghazi. They were later on renamed to the University of El-Fateh in Tripoli and the University of Gar-Unis in Benghazi. The history records the increasing number of students enrolling in higher education since 1981, and due to this many public universities were established. Presently, there are 18 public universities, 148 specialized faculties and over 500 specialized scientific departments.

The university-level studies consist of three stages: Bachelor's degree (four to five years), Master's degree (two years of study) and Doctorate (two years of further research and conditional up submission of a thesis).

Higher vocational and technical education lasting three to five years is offered by the higher education institutes in the following fields: Electricity, Mechanical Engineering, Finance, Computer studies, Industrial Technology, Social Work, Civil Aviation, etc.

The education system is entirely under the responsibility of the Ministry for Education. Its Higher Education Department supervises all the activities and operations of all universities in Libya. The Libyan authorities invited the private sector to participate in the state's education system. This has recently resulted in establishment of more than 1,000 privately funded elementary primary and secondary schools and institutions. More than 30 private universities providing the education in all disciplines were established.

There is also an initiative in the possibility of developing partnerships between the public and private sectors to finance higher education, which resulted in the establishment of more than five private university colleges and higher education institutes in the period between 1997 and 2000.

Libya's population number approximately 6.2 million people, including the number of students is 2.7 million. The number of university students shows the tendency of increase. As a result, the number of the universities has increased from two to nine. Presently, there are 18 government funded universities and over 260 higher education institutes providing education in the areas such as administration and management, technology, teacher training etc.

3. ICT Policies and Projects

The 1990's and early 2000's are referred to as the "information technology era". A vast number of organizations including governments are allocating significant sums of money for adoption, implementation, management, integration and development of information and communications technology in order to provide better products and services, thus achieve competitive advantages. The process of implementation of ICT is currently on a much higher level in the developed countries than in the developing countries. Although the latter are eager to adopt new information technologies, the process of adoption is slow and on less scale due to many reasons such as undeveloped infrastructure, lack of resources, mismanagement, insufficient number of qualified experts, social and cultural reasons, etc.

The use of technology in Libya is minimal, regardless of being one of the wealthiest countries in the region. Internet market and internet services are in early stages of development. Libya has one of the lowest rates of internet uses in the Arab region. On the other hand, Libya's growth rate in internet use is high compared to the other countries in the African region [4].

Libya launched the national policy for ICT in education in 2005 and is mainly managed by the Ministry of Education and the Ministry of Vocational Training with the participation and support of the GPTC (General Postal and Telecommunication Company) and Libya Telecom and Technology. The policy in general aims at enabling access to the ICT through the provision of computers and the Internet.

Adequate telecommunications systems are crucial for the technology to be widely used and accepted in the society. Without the technology, the innovation and progress cannot occur nor be effective.

GPTC is the only telecommunication company in Libya and the national operator. It regulates all telecommunication services. GPTC belongs to the state and has no administrative nor financial independence.

In 1996, cellular telephone systems became operational. They had limited access and coverage, and were mostly used by governmental institutions. In 1997, the company LTT (Libyan Telecom Technology) was founded, and it was the first Libyan company operating in the field of information and communication technologies. The IT system and services were modernized and improved since the launch of LTT.

Adoption and implementation of ICT is essential for the development of the process of education itself. Implementation of e-learning can help reduce the physical distance between the students and lectures,

thus enable the opportunity of education to those students coming from remote and hard-to-reach areas, particularly having in mind that the major portion of the country is covered by Sahara Desert and hardly inhabited.

The policy of implementation of ICT in educational sector in Libya is in its early stages of development. In order to improve the quality of education through implementation of ICT, its main goals are:

- Adopting modern techniques and methods in education;
- Encouraging the scientific community to engage in research within the community;
- Encouraging the private sector to become involved in funding of higher and specialist education;
- Developing open and distance learning as well as continued education;
- Encouraging higher education.

Libya still does not recognize distance learning nor e-learning as valid models of education.

On the other hand, implementation of the opportunities that the internet provides and their integration into the education system requires significant preparation and work in order to switch from the traditional method of education to e-learning. E-learning implementation depends at a significant extent on tutors' awareness and attitudes towards e-learning and a local expertise in curriculum development and its adaptation towards e-learning. The studies have shown that Libyan tutors spend most of more hours per week in teaching. This reduces the time available to conduct research and improve their skills. The overloading of teaching could as well influence the quality of teaching. Given the above, it is clear that teaching overloading effects on decrease of research activities and development of education [5].

Below is the Fig. 1 shows the teaching time presented in hours per week compared between the educators giving lectures in the Libyan universities and the universities in UK.

Another important aspect of development of e-learning is development of interfaces for e-learning system and e-learners, providing the tools and education resources, creation of e-libraries, etc. A number of initiatives and projects are presently in progress in Libya. One of the major project, supported and sponsored by UNESCO and the government of Libya refers to the establishment of the LHERN (Libyan higher education and research network). The projects envisage development of LANs within almost 150 faculties belonging to different universities and a WAN to provide integration of numerous institutions providing higher education. Establishment of a nation ICT resource center and automation of managements systems of universities is also anticipated by this project.

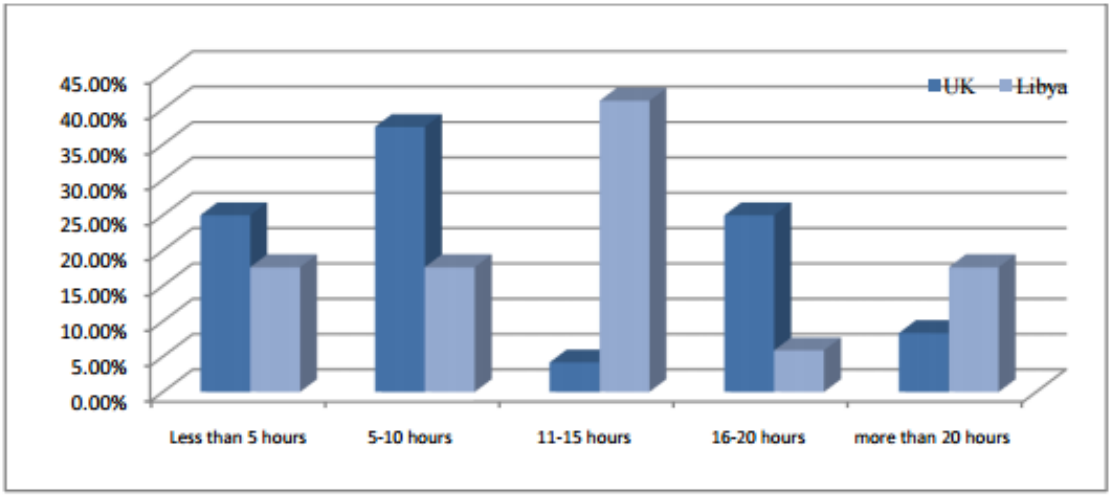

Fig. 1 Teaching time given in hours per week.

Development of ICT will affect positively on the development of digital literacy, basic IT skills, enhancement of e-learning, tele-education and tele-medicine. The universities' teaching and management staff will be provided with proper training in using ICT in teaching and system administration respectively.

One of the most important aspects to be taken into consideration while working on the development of interfaces and e-systems are cultural differences and linguistic background of the users. People's perceptions of ICT and e-learning differ depending on their cultural backgrounds.

Implementation of ICT policies in Libya is burdened with numerous challenges and constraints, starting from insufficiently developed IT infrastructure, shortage of ICT qualified teachers and developers, economical, political, cultural and other constraints.

The main goals of the national ICT policy for education established by the Libyan government are to enable access to ICT tools and to build a proper infrastructure, furthermore, to encourage research and educational/teaching skills development in order to provide adequate learning methods, tools, materials and media, taking under consideration that a significant number of students, even educators have limited linguistic knowledge (meaning speak not more than only Arabic language); on the other hand most of the e-learning materials available to e-learners are in English language, a very small percentage is available in Arabic. One of the key objectives of the national ICT policy is the development of human resources and building of a strong society which will enable to the country to compete in the global arena.

4. E-Government in Libya

National and local government from all the regions throughout the world are putting their efforts to establish e-governments, that is to utilize the mechanisms enabled by the internet in order to simplify the complicated and time-consuming operations and procedures, their interaction with their employees as well as businesses and citizens.

The widespread definition of the electronic or digital government is represented in the use of the information technology and communication to assist the efficiency of the government service and its dealing with citizens in a better and easy way and it allows the great attainment of information and makes government itself more responsive to the desires of citizens.

The main objective of establishment of e-governments to reduce the costs of direct transactions which on the other end results in reduced cost of government delivery services. Electronic systems affect improved and faster coordination between government agencies as well as simplified administration.

The progressive development of the IT made possible to exchange massive amounts of data at very high speed and over great distances. With the development of the IT the number of attacks on the governmental and other websites have increased. Taking into consideration the internet is an open environment, protecting the data flow on the internet from attacks is one of the imperatives of all governments. Most countries have adopted policies and strategic frameworks defining the ways of prevention of the attacks. In most cases, adequate server firewalls controlling traffic over the servers are a good solution.

The goals of e-governments differ in importance in accordance with the priorities set by a specific country. One of the common goals is to enable easy access to electronic services through electronic publishing in order to achieve transparency and promote democracy.

Governments e-services are generally divided in three groups:

- G2C (government to citizen) which refers to the interaction between governments and citizen and services provided by the government to its citizens;

• G2B (government to business) refers to the transactions between the government and private sector, that is businesses and industry and;

• G2G (Government to Government) refers to the services representing the interaction and communication between a variety of government units, agencies and facilities, as well as international cooperation between the governments of the different countries.

The services provided by the government include, among others, paying taxes, duties, automobile registration, as well as standard services such as issuing identity cards, passports, birth and marriage certificates, judicial decisions, request for and issuing building permits, public libraries (availability of indexes, and research tools), enrollment in higher education, address change, and health-related services (e.g., providing interactive medical advice, taking appointments, voter registration and payment of any required fees using credit cards, etc.

As of 2007, Libya has changed its ICT policy and has proposed many initiatives and invested certain funds in the development of infrastructure and utilization of technology in order to improve the services provided to its citizens and the private sector of the country. Nevertheless, the development of e-government in Libya is still in its early stages due to many reasons such as the recent civil war, embargo, insufficient investments in enhancing of necessary infrastructure, lack of qualified IT workforce, etc. In other words, Libya is facing numerous challenges from political, economic, social, technological and cultural perspectives.

One of the greatest challenges Libya encounters with in implementation of e-government is a lack of good legislation framework and strategy. However, there are no commonly established guidelines for setting the e-government strategies. The best approach to e-government depends on each specific (local or national) government, as well as on the political system and efficiency of technology in individual units of the government. One of the crucial factors is individual and public awareness and motivation of the government employees to accept and adopt e-government and its advantages. The key to success of e-government is to support it and make it become sustainable.

E-government strategy represents a plan of the systems of e-government and supporting infrastructure which would maximize management abilities to reach organizational goals. It should contain strategic directions, objectives, components, principles and guidelines for its implementation. The e-government strategy should be understandable and without any double meanings [6].

Another challenge Libya encounters on its path of e-government development is digital divide. Libya has launched several initiatives in an effort to bridge the digital divide.

The number of internet users is constantly increasing (Fig. 2); it is estimated that from the year if 2008 up to now this number has reached its highest point. Libyan government has to invest more efforts to create a model community conscious of the importance of information through more initiatives and projects in order to build the information society able to keep the pace with the developed countries.

In order to improve its e-government programs, Libya must improve its national and local e-government framework strategy, work on development of infrastructure and faster implementation of e-government

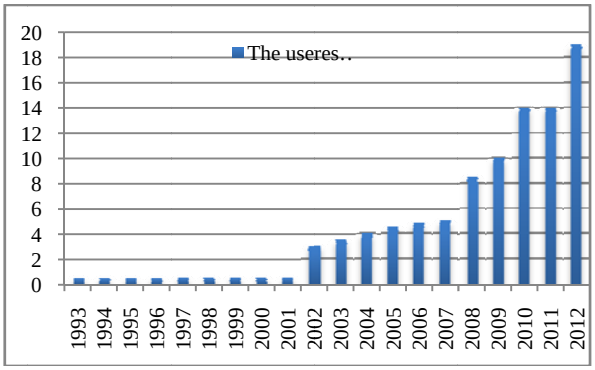

Fig. 2 The number of Internet users in Libya per 100 people.

applications, improve different programs such as e-learning, e-healthcare, e-commerce, raise awareness of its employees and citizens about the importance of e-government operations and importance of internet use.

5. Archaeology and Cultural Heritage—Use of ICT

Archaeology is a discipline focused on the study and research of material remains and objects from the human past in order to learn and understand their society and culture. It fulfills one of the basic human needs of situating themselves in time. The archaeologists have always been quick to adopt new technologies and new techniques from other discipline as well as they have been striving to involve the public in the archaeological activities. The development ICT has also brought the new ways of dissemination of information and research material. The internet provided a way to represent and record to archaeological material so as to share it with wider audience.

The cultural heritage represents all the aspects of a community's past and present, that is it considers to pass on to future generations; the term incorporates places, objects and practices of cultural significance. Furthermore, "it includes 'tangible heritage', such as buildings, industrial structures and technology, landscapes and artifacts and non-visible cultural heritage features such as buried archaeological sites, and 'intangible heritage', such as language, visual art, music, performance, religion, beliefs and customary practices like hunting and gathering. Cultural heritage is not just about old things. New or newly altered objects, places and practices are just as much a part of cultural heritage where they to hold cultural value for today's generations. Cultural heritage management involves the actions taken to identify, assess, decide and enact decisions regarding cultural heritage. It is undertaken to actively protect culturally significant places, objects and practices in relation to the threats they face from a wide range of cultural or natural causes. It may result in the documentation, conservation, alteration or even loss of cultural heritage. It can also include working with communities to protect and enhance their culture and its practices" [7].

From the practical viewpoint archaeology focuses on survey, excavation and analysis of archaeological sites. Most of the archaeological work is destructive since it is only possible to excavate the site once, on the other hand the archaeologists need access to primary data so as to reanalyze the data, test conclusions, etc. New ICT tools provided the possibility to develop different ways to help the archaeologists preserve the primary data. The archaeology is an especially appropriate discipline to promote the use of ICT since it is multidisciplinary and uses a vast range of data types.

The development of ICT brought us many different mediums of communication a spreading of information such as the Internet, mobile phones, wireless networks, etc. Furthermore, the data regarding artifacts, sites and archaeological heritage in general are now being stored on mediums such as a server or a cloud. This allows the creation of a virtual world which enables the public to easily access these virtual worlds and take participation in the archaeological activities (Fig. 3). The virtual worlds are increasingly used as educational and research tools

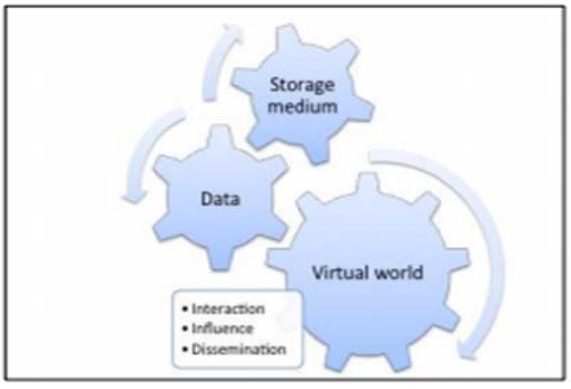

Fig. 3 The interaction between ICT and virtual worlds by Haggis &Vasilache (2013).

since they concentrate and store data and present them in visual form.

There are seven categories of virtual worlds related to archaeology (Fig. 4) [8]. These types, however do not represent all the virtual worlds related to archaeology on the internet. Each of them varies in content, some include only text and images, while the others include videos, animation, simulation or 3D content. These types of virtual worlds are:

The most accessible web pages are the ones containing site tours, followed by museum web pages and virtual real estate.

Fig. 4 Virtual world categories by Haggis & Vasilache (2013).

Virtual world	Purpose	Reference
Site	Tour	Chiarulli et. al (5)
Maritime	Tour	Watts &Konerl (6)
Reconstruction	Knowledge repatriation	Dawson et. al (7)
Real estate	Reconstruction	Chiarulli et. al; Morgan (8)
Landscape	Scenario testing	Winterbottonm& Long (9)
Excavation	Field knowledge	Getchall et. al (10)
Museum	Tour	Walczak et. al (11)

Sites: provide the opportunity to the public to take interactive virtual tours of archaeological sites,

Shipwreck: virtual 3D worlds enabling experience in form of a tour, which in other circumstances would have been deprived to the public due to specific site conservation limitations and artifacts restriction,

Reconstruction: uses 3D and video technology to superimpose a digital version of ruins on top of the present state or vice versa,

Real estate: enables creation and participation of virtual community whose focus may vary, or to enable modeling the original site within a virtual world,

Landscape: virtual representation of landscapes can be used to show the changes between the past and the present, meaning the impact of the sites on the landscape,

Excavation: can be both professional and public experience. The excavation in practice requires significant funds and investments, therefore it is not always an option given to the student to acquire necessary excavation skills. Nowadays, there are projects which provide virtual environment where students can achieve these skills,

Museums: provide interactive virtual tours enabling people with different needs to access collections which can also include the material not displayed due to various reasons (lack of space, funding restrictions…)

The use of 3D technology and modeling can help the archaeologists preserve the discovered material and prevent damaging or destruction of even the most fragile of the artifacts. Nowadays, the replicas of ancient objects or even the entire sites can be created using special computer programs for 3D image processing, 3D scanning and 3D printing. Tree-dimensional technology is used for research purposes only in the past decade. Using 3D printing and simulations, the archaeologists are able to recreate the entire large scale sites, as well as display the soil layers.

One of the ways to enable the public archaeology is through electronic publications, that is electronic journals. They offer new opportunities to display the archaeological data and their interpretation which could not have been represented in conventional publications.

Electronic journals require web-based software able to deliver and display multimedia content, reusable and widely applicable interface with appropriate access control software so as to verify that the readers have a legitimate right to access journal [9].

In order to secure the quality, long term viability of electronic publications, including journals, strict standards governing the citation of electronic publications must be established and implemented.

Protecting the copyright of electronic publications represents one of the major obstacles in dissemination of information. The managing editors of electronic publications must ensure the protection of copyright and intellectual property rights to the contributors by licensing terms in order to prevent redistribution of the articles.

6. Libya in History Resources

By reviewing the ancient Greek-Roman mythology we well find that there are always three continents “Europa, Asia and Libya”, and in the ancient Greek resources, all the land that is in west of Egypt was known as Libyan land. In matter of fact, the name

came from the tribes that lived west from the Nile valley that has been described as “Lebu, or Rebu” in Egyptian inscription of the second millennium (Figs. 5 and 6), and centuries later the Greeks gave the name Libyan to all the people of North Africa, as well the evidence of language points that the spoken language was Berber “Tamazight” in classical times—“the analysis of the places-names should confirm this thesis” [10-12].

However, today, Libya occupies an area of 1,760,000 million square kilometers: the vastness of the area could be illustrated by a long west-north border with Tunisia, west border with Algeria, south-west border with Niger, south border with Chad, south-east border with Sudan, east border with Egypt, and a long overlooking coastline of 1,960 km on the Mediterranean Sea. The area contains a diversified archaeology-cultural sites and material, with a circled distribution.

The prehistoric heritage is very extensive with Acheulean, Mousterian, Aterian, Iberomaurusian, Capsian, and Neolithic cultures, with famous sites and locations such as: HauaFteah cave, Hagfet et Tera and Marble Arch in Cyrenaica, Shakshuka, Jado, WadiGhan, Terhuna, and Silen in Tripolitania, and Tadrart Acacus, Messak “Methendush”, Hamada, Ben Genima, and Awinat in Fezzan [13-20].

The amounts of archaeological materials (Fig. 7), beside the stone art performances, provide without a doubt the largest and richest open museum of human inheritance in North Africa [19-25].

Libya was widely known throughout the entire antique and medieval history, beginning with Greek, Phoenician-Carthaginian, Roman, and Byzantium periods, of its antique cities and centers such as Cyrenaica, Appolonia, Euesperides, Gerza, Leptis Magna, Oea-Tripoli, Sabratha, Jerma, Gedames which all represent a unique antique treasure [26].

Islam has been present on Libyan soil since its revelation, assimilating with local culture centers with a specific north African architectural style and tradition,

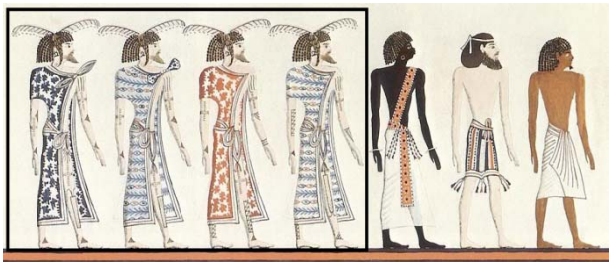

Fig. 5 Left four Libyan’s “Themehu”, from the fresco of the tomb of Seti.

Fig. 6 First left a Libyan, from Ramesses III Temple at Medinet Habu.

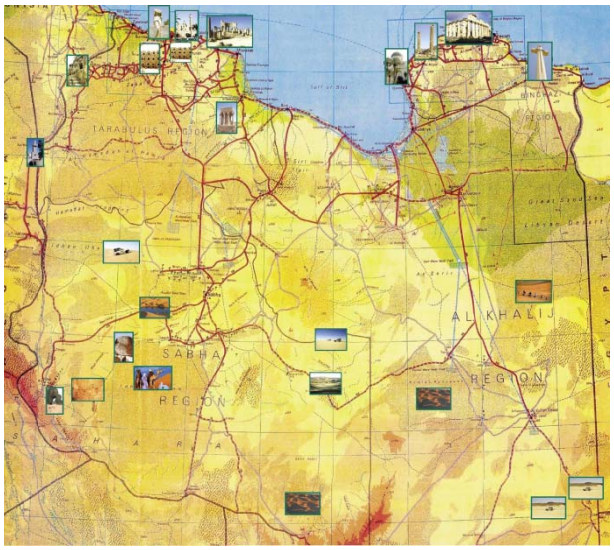

Fig. 7 Archaeological heritage over Libyan landscape.

including through the Ottoman and Modern period, thus the area provides a multicultural inheritance.

The population of Libya consists of people of Berber descent and Arab, as well as of mixed and pure negroes originating from the Central Africa. Their ancestors were brought to this area as slaves. Furthermore, Libya is also inhabited by the Tuareg tribes and Tebu people. However, even with all this racial diversity, the official language in Libya is

Arabic, albeit a large number of its citizens speak either Tamazight (Berber and Tuareg) or Tebu as their mother tongues.

Unfortunately, the rich Libyan cultural heritage was subject to political deliberate and systematic manipulations by the previous regime. On many occasions, the material records themselves were distorted or destroyed [27, 28]. During Gadaffi's rule, the cultural inheritance was often used only for his personal glorification [29].

During the civil war in Libya, the Central Bank in Banghazi was robbed, as well as the Tripoli Museum and many other institutions even by the highly-ranked officials. Many of the stolen treasures ended up being sold on the black market (Fig. 8).

Unfortunately, the Libyan inheritance is still jeopardized. Presently, the destruction of the archaeological remains continues. It is known that pillaging of a number of Sufi shrines and historical sites in Tripoli, Derna, Zliten, Misrata and other parts of the country has occurred, followed by the detention of three journalists covering the attacks in Tripolion Aug. 25, 2012 and kidnapping of an imam during a peaceful protest in Tripoli on Aug. 26, 2012 condemning these attacks. The attacks, detentions and kidnapping represent a disturbing turn in Libya's transition. They also underline the importance of guaranteeing freedom of religion and expression in the new Libya, and the protection of its heritage and its historical sites. The new government of Libya has a responsibility to ensure Libya's commitment to its international obligations under the UN International Declaration of Human Rights as well as the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage [30, 31].

Fig. 8 Roman figurines stolen by simple soldiers found in military vehicle.

Fig. 9 The Christian graves destroyed by radical Islamists.

The Christian graves and local national centers and monuments have been destroyed by radical Islamists (Fig. 9), in spite of the fact that they were under the protection of international laws [32].

Due to lack of properly organized and archived material records, it cannot be even said how much of Libya's cultural heritage has been lost so far. In case that the Libyan institutions for cultural heritage preservation have adopted and implemented some of the means provided by the development of ICT and internet archaeology, this would have not been the case. The records and details about the artifacts, the sites, etc. would have been preserved at least in electronic form. This would have given an idea of the amount of the cultural treasure lost due to negligence of the regime and relevant institutions.

7. Conclusion

The emerging and development of ICT has changed the people's lives to a significant extent. It has provided the opportunity to the people, businesses, institutions and governments to connect and interact fast and easily. The countries invest large amounts of money in further development and implementation of ICT in order to either maintain their position or keep the pace with the leading countries on the global market. Despite this fact, the implementation of ICT is in its early stages, regardless of the specific field taken into consideration, was it industry, education, establishment of e-learning, e-government, healthcare

system, even fields such as archaeology.

The education system in Libya is entirely under the responsibility of the Ministry for Education. The number of university students is increasing, consequently the number of the universities has increased as well in the past several decades. Libya launched the national policy for ICT in education in 2005. Implementation of e-learning can help reduce the physical distance thus make education more accessible to the population of Libya. However, the government and the universities do not recognize e-learning as a valid model of education. The implementation of ICT policies in Libya faces with numerous challenges and constraints, starting from insufficiently developed IT infrastructure, shortage of ICT qualified teachers and developers, economical, political, cultural and other constraints.

E-government represents the use of the information and communication technologies to assist the efficiency of the government service and its dealing with its citizens' needs in a better and easy way making it more responsive to its citizens' desires. E-government helps simplify processes and makes access to government information easier, less costly and more efficient. Libya has changed its ICT policy and has proposed many initiatives and invested certain funds in the development of infrastructure and utilization of technology. On its way to enhancing its e-government services Libya will have to overcome many challenges (political, economic, social, technological and cultural); one of the greatest of them is a lack of solid legislation framework and strategy.

The development ICT has also brought the new ways of dissemination of information and research of archaeological material and a possibility to share it with wide audiences. The development of ICT enabled the creation of virtual worlds through which the public can easily take participation in the archaeological activities. The ICT allowed the creation of virtual tours of the archaeological sites, maritime, real estates, museums, etc. Three-dimensional technology enabled 3D scanning and 3D printing which allows to the archaeologist to recreate and preserve the ancient artifacts and sometimes even the entire sites from damage and destruction. During the past years, a significant portion of Libya's cultural heritage, many of which we have no records, was destroyed, lost or stolen due to civil war, negligence of the regime and lack of adequate legislation and institutions. This could have been prevented had the implementation of ICT in internet archaeology was on a higher level of development.

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