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Bakeer, Ali, Wynn, Martin G ORCID logoORCID: https://orcid.org/0000-0001-7619-6079 and Khalil, Hussian (2020) Towards a strategic and operational framework for digital technology deployment in Libyan universities. International Journal of Advance Research and Innovative Ideas in Education, 6 (6). pp. 2614-2617.

Official URL: http://ijariie.com/AdminUploadPdf/TOWARDS_A_STRATEGIC_AND_OPERATIONAL_FRAMEWORK_FOR_DIGITAL_TECHNOLOGY_DEPLOYMENT_IN_LIBYAN_UNIVERSITIES_ijariie13358.pdf

EPrint URI: https://eprints.glos.ac.uk/id/eprint/9229

TOWARDS A STRATEGIC AND OPERATIONAL FRAMEWORK FOR DIGITAL TECHNOLOGY DEPLOYMENT IN LIBYAN UNIVERSITIES

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ABSTRACT

The increasing impact of digital technologies on educational institutions is widely acknowledged, and this now encompasses Higher Education Institutions (HEIs) in developing countries as they follow the developed countries in their new technology adoption for their education activities and systems. In Libyan universities, the use of digital technology is still in the early stages of development. This initial report from this study focuses on the deployment of digital technology and related applications, in particular Cloud computing, in higher education in Libya. The paper highlights the difficulties faced in the planning and implementation of digital technology strategy, and subsequent analysis will put forward a checklist of activities to support strategy development and implementation within Libyan universities. A case study approach entails interviews and questionnaires conducted in three Libyan universities as a pilot for data collection. The provisional findings highlight the areas that need be considered and addressed for digital technology deployment in the learning and teaching processes, including technology infrastructure, curriculum development, human activities, cultural and language aspects, and management support. The study will also develop a plan for the integration of digital technologies into Libyan higher education.

Keyword: *Digital Technology, Cloud Computing, Strategy, Libya, Usability.*

1. INTRODUCTION

Digital technologies play a significant role in everyday life, making an impact on many aspects of business activities and day-to-day living. The usability of digital technology in different fields has shown positive achievements in the developed world in many fields – industrial, governmental, social, cultural, educational, etc. However, it is still in the early stages of deployment in developing world countries, and Huffman [1] argued that the development and use of digital technology applications has been growing since the computer was developed and made available, for both individual use and as a means of bringing added value to business activities. More recently, the use of the computer in education has rapidly increased due to the accessibility and readiness of such technology [2]. In Libya, universities are adopting and developing information systems and technologies to provide students with new ways of learning, to improve communication and provide more efficient administrative support [3]. Digital technologies can give access to communities to educational resources and materials that in many cases are not available locally [4]. For all students, digital technology can support remote communications, obviating the need to be onsite in the universities' classrooms, and giving access to portals that provide collaborative learning materials [5].

2. IMPORTANCE OF STRATEGY

Strategy speaks to the positions or goals an organisation adopts and the plans it creates to achieve the designed situations. Not all strategy is equally created. Thus, in many organisations there are stages of strategy implementation. For example, in the model developed by Bharadwaj et al [6], Business and Organizational Strategy (BOS) is seen as an advanced top-line strategy, which delivers clarity on which direction the organization wants to follow. BOS is about choices: defining who the organization's stakeholders are and what they want, how the organization will respond to these requirements, and what plans will be put in place to help accomplish these goals.
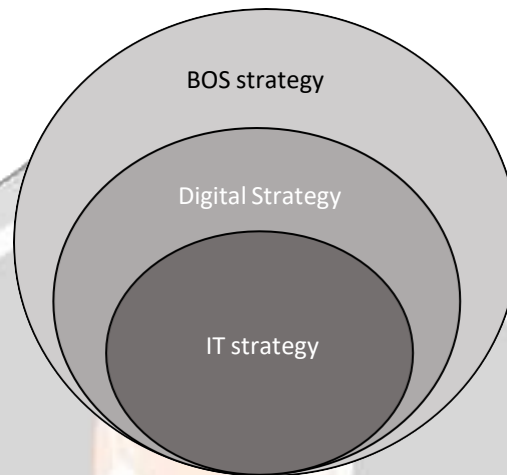

Figure.1 Stages of Digital Strategy
evolution [6]

Universities also require a Digital Strategy and supporting digital technologies deployment. Digital Strategy determines how technology will be applied to support the university's business model. "Technology" in this case is not about whether there are enough devices such as servers or the upgrade of technology applications such as laptops. For universities, it is also about IT's capability of supporting e-learning and a 24×7 accessibility service for its users – the staff and students of the university. In a fully digitalized business model, there may be no differentiation between BOS and Digital Strategy, as all activities and processes are digital [7]. However, for universities in Libya, it is still useful to identify digital strategy as separate from BOS.

Within Digital Strategy, IT Strategy aims to ensure that the university has the right technologies and capabilities to support the day-to-day operations and main processes, and that the infrastructure is sufficiently mature. IT strategy needs to be aligned with Digital Strategy and BOS. In the current university context, IT is normally seen as a support tool. Assuming internet connections are available, student access to educational materials 24/7 will increase the productivity of the learning and teaching processes [8]. Online education courses such as Massive Open Online Courses (MOOCs) offer the chance for students to engage in classes, irrespective of location or time zone [9]. The responsible authorities and related cooperative bodies in Libyan HEIs should work to develop and implement a national digital technology strategic plan [10]. To achieve such initiatives, it will require professional experts who have the required knowledge and experience in digital technology deployment [11]. However, the development of appropriate digital strategies will be needed both at university level and at national level for all HEIs.

3. METHODOLOGY

The study takes an embedded multiple-case study approach, using data delivered from three university cases in Libya (using the aliases C1MU, C2AU and C3EU). The study adopts an interpretivist approach, and data was collected via interviews conducted with managers and front-line education process owners between September 2020 and December 2020. In addition, daily interaction with process owners and other staff in meetings and workshops allowed the researchers to observe conversations and decision-making. A qualitative descriptive approach was used to code data from the three cases and generate word tables to guide analysis. The literature review indicated that several projects relating to digital technology usability and deployment in education have used a SWOT (Strengths,

Weaknesses, Opportunities and Threats) analysis [12] and this will be replicated in this study. For an initial conceptual framework, the study identified a number of dimensions for analysis: the technological infrastructure itself, the curriculum development process, staff capabilities, cultural and language aspects, and management support and leadership. A pilot questionnaire, containing six questions covering field of study, awareness of digital strategy and use of cloud computing was used to gain some initial feedback and impressions from the interviewees.

4. INITIAL FINDINGS

The provisional findings and analysis indicate that Libyan universities are slowly gaining some benefit from the adoption of digital technology. The key actors in in all three universities believe that more digital services from their institutions are required, and that this is critical to the future success of Libyan HEIs. However, initial findings indicated some variance in awareness of digital technology and its benefits. At C1MU, the importance of cloud computing was highlighted by IT staff and the engineering department, but at C3EU there was scant knowledge or awareness of cloud technology. The findings will report on:

- The difficulties of employing digital technologies as seen by teachers and students.
- The current status of digital technology deployment at the three universities.
- A framework and strategy for effective digital technology deployment in Libyan HEIs.
- The need for a future digital technologies plan for Libyan universities.

5. CONCLUDING REMARKS

There are many factors such as increased competition and student demand that are putting pressure on HEIs to implement digital technology. However, the process for doing so involves more than simply installation of computers or networks, and appropriate strategies need to be researched, developed and implemented. Many Libyan universities plan to implement digital technology, but the extent and speed of implementation depends upon internal influences such as resources, organizational culture, ICT maturity, readiness, predicted adoption resistance, and the flexibility to adapt to required adjustments in processes and organizational structure. In addition, there are external influences, notably the level of support from the Ministry of Education, outside supplier negotiations, and legislative aspects. Digital technology strategy implementation will importantly require mentoring, continuous collaboration, and support of the process by university leadership and staff members. At the three universities studied here, efforts are currently underway to expand teaching programs that deploy digital technologies.

It is clear that Libyan universities need to develop and adopt a digital transformation strategy, in particular for the teaching and learning processes. Universities need to gain expertise in dealing with IT tenders and technology implementation agencies, to provide the basic technology infrastructure to support digital education and e-learning applications. Training and awareness sessions are needed for both teachers and students to exploit digital applications, such as those facilitated by cloud computing technology. All this highlights the need for clearly thought through strategies and action plans.

6. ACKNOWLEDGEMENT

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