Balancing of Skills in the Digital Transformation of Education and Employability

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Abstract

Balancing the skills through digital transformation will help increase the graduates' employability. This study explored the digital transformation in the Sultanate of Oman by looking at the different aspects, such as how this transformation has affected the way the educators conducted their lessons and, at the same time, how students learned from the shared learning materials. Based on the gathered literature, digital transformation is essential to education for various reasons, such as enabling collaboration and personalized learning. From the global and Omani perspectives on teaching and learning methodologies, it shows similarities in conducting online and hybrid classes, submitting students' output, and assessing the students' academic success. The recommendation focuses on continuing current strategies and provides additional support for students facing challenges; It is also recommended to create a venue or platform which will assess the educator's technology skills to ensure their readiness for the challenges of the digital transformation. The government and private education institutions should continually enhance the technology infrastructure requirement of this ongoing digital transformation to ensure that Oman will offer the best in the world and to continually offer sustainable knowledge for society through improved technology infrastructure

Keywords: digital transformation, skills in digital transformation, employability skills

1. Introduction

Digital transformation can be viewed as adopting different forms of technology to improve processes and skills. In most cases, the goal of digital transformation is to improve efficiency and value through innovative practices. Oman's digital transformation is rather significant because it aims to embrace digital technology and maximize its application to government processes, including the educational system. According to Oman's Ministry of Transport, Communication and Information Technology (2022), digital transformation is necessary for private entities and the government, which also offers sustainable knowledge for society through improved technology infrastructure. In addition, the digital transformation initiatives in the Sultanate of Oman are viewed as a significant improvement to the nation's educational system. As Al Hasani and Husin (2021) explained, the traditional teaching method in Oman was changed by transforming the way digital technology is applied to education. Thus, Omani educators' roles were also transformed significantly since the digital transformation enhanced their teaching strategies due to technological adoption.

2. Theory

2.1.   What is digital transformation in Oman?

Digital transformation can be viewed as one's adoption of different forms of technology to improve processes and skills. In most cases, the goal of digital transformation is to improve efficiency and value through innovative practices. Oman's digital transformation is rather significant because it aims to embrace digital technology and maximize its application to government processes, including the educational system. According to Oman's Ministry of Transport, Communication and Information Technology (2022), digital transformation is a necessity for private entities and the government, which also offers sustainable knowledge for society through improved technology infrastructure. In addition, the digital transformation initiatives in the Sultanate of Oman are viewed as a significant improvement to the nation's educational system. As explained by Al Hasani and Husin (2021), the traditional teaching method in Oman was changed by transforming the way digital technology is applied to education. Thus, Oman teacher's roles were also transformed especially since the digital transformation changed the way teaching was enhanced through technological adoption.

2.2 Key Areas of Digital Transformation in Education

Digital transformation in education involves several key areas, including but not limited to online or distant learning, student assessment, and personalized learning experience. Digital transformation in Oman's education enabled online or distant learning, as evident during the height of the COVID-19 pandemic. Through digital transformation, the continuity of learning was successful, despite the threat of the virus. Apart from Oman's utilization of technology in education during the pandemic, this approach to learning continuity was also evident across different nations, As part of the process, the other areas of teaching and learning were also conducted through digital technology. For instance, the Oman educational institutions during pandemic also conducted student assessments using different form of technology.

A good example was when the Oman HEIs designed an internet of things (IoT) framework to enhance Omani students' performance during online assessments (Al Rashdi & Elshaiekh, 2022). Another area of digital transformation in education is the provision of personalized learning and teaching experience. Today, the Omani educators have the opportunity to personalize their teaching approach by using technology-based learning materials. On the other hand, Omani students can choose the proper learning phase and have complete access to information that will help them learn better.

The current era of digitalization was a source of various opportunities to further the educational goals on which educational institution continually adapt and innovate in line with digital developments. This is the digital transformation framework which consists of the following components: 1) Understand what digital transformation for education means; 2) Incorporate digitalization as part of organization strategy; 3) Tailor digital transformation process to specific needs; 4) Create agile systems to test and adapt; and 5) Retain a focus on students at all times (Medina 2022).

2.3 Why is Digital Transformation Important to Education?

Digital transformation is essential for enhancing the quality of education. Digital transformation is more than just the utilization of existing technology, but it is a concept that aims to transform teaching and the learning methods. A recent study revealed that the processes involved in digital transformation lead to the creation of a more effective learning environment for the learners (Yildiz, 2022). In Oman HEIs, having a better learning environment increased the Omani students' motivation to learn. Likewise, faculty who adopt technological tools after the transformation will also realize the importance and benefits of digitalized teaching and learning environment. As technology keeps evolving, Oman's educational system will have to cope with the changes, especially on issue of technology applications. With an effective learning environment through digital transformation, students will also collaborate more effectively, especially during class discussions. The importance of digital transformation to education, Saini and Al Mamri (2019) added that using technological tools in Oman would help develop the potential of Omani educators to contribute to curriculum development.

Another reason why digital transformation is essential to education is that technology offers a broader learning tool, which establishes a better connection between the stakeholders, such as students, teachers, parents and education experts. (Al Hasani & Husin 2021). Indeed, the digital transformation of Oman education creates positive effects in transforming the teaching and learning environments that can lead to a more favorable result for educators and students. In a much broader sense, it was explained by Al Ajmi et. al. (2020) that higher educational institutions across different nations are now transforming their educational system through the expansion of information and communication technology (ICT). Hence, the Omani educational environment has adopted this global trend through digital transformation. This is an essential approach to embracing digital technology because the Oman educational environment will have the chance to leverage the quality of education across the country; thus, enabling Omani students to increase their employability through better skills acquisition.

2.4 Global Perspectives on the Different Digital Transformation Teaching and Learning Methodologies

As previously mentioned, digital transformation in education involves using different forms of technology. Thus, there is a global perspective regarding the different methods of teaching and learning through digital transformation. The current educational environment is already part of modern education, wherein technology plays a significant role. Therefore, there is a need to modernize the system and the way education is provided and students learn. According to Voronin et al. (2020), the digitalization

of education leads to the development of different implementation strategies to ensure that both the faculty and students will benefit from this digitally transformed education system. These strategies include the formation of digital literacy and competency among the teaching staff, forming digital portfolios of students and teachers, and filling in the ICT environment of the educational institution with high quality educational content.

On the other hand, these strategies have been translated into new teaching and learning methodologies. A recent global survey shows that higher education institutions across different countries had already adopted the digital technology before the pandemic (Rof et.al. 2022). In addition, most surveyed educational institutions from various nations also showed that most had replaced classroom teaching with distant, online or hybrid teaching. Although the recent pandemic forced some colleges to adopt digitalization, it has led to a more flexible teaching and learning modalities.

Teaching processes have been changed through the adoption of a digital education environment. As a result, the standards in teaching methodologies have also changed which include online submission of tasks, online discussions, collaborative study and even the use of slide presentations and video content online. In some cases, colleges have imposed new policies regarding teachers technical training and the mandatory use of IT in their teaching methods (Amorin & Meirelles, 2018). Furthermore, the teaching and learning methodologies that have emerged because of digital transformation include highly accessible learning tools that can be used without advanced technical proficiency. For example, conducting classroom discussions through video conferencing platforms and using online search engines to obtain topic related to sources and references can be used for completing the college work and assignments. Apart from these new methodologies, many colleges have adopted the augmented reality (AR) and virtual reality (VR) as part of their teaching and learning approaches. There is a global trend regarding the digital transformation of the educational system, which can also help enhance the students' employability.
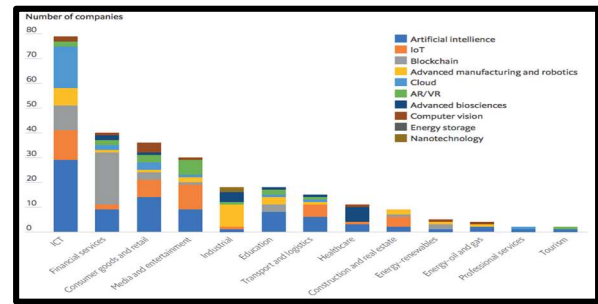

Figure 1: Integration of advanced technology in core offering by sector (The Economist Intelligence Unit Limited, 2020)

The essence of improving the students' employability through digital transformation of education is based on the fact that more and more companies in the GCC region are now adopting various forms of technology. It is significant that Omani students must be equipped with adequate knowledge to equip themselves and match their skills with what the different sectors are looking for. Based on the above evidence, it is the information and communication technology (ICT) sector that has the most integration of advanced technologies that offer computing solutions, data mining, blockchain, artificial intelligence, virtual reality, among others.

The global perspectives on digital transformation in teaching and learning have garnered positive views from the academicians themselves, especially that globalization and digitalization have been combined to transform the educational systems across different GCC nations. As AI and VR have already started to become part of the modern education, teachers and learners now have the opportunity to experience some of the real-life scenarios that can increase students' preparedness for their future roles and careers. Globally, the digital transformation also pushes the education sector toward becoming more digitalized through the help of technology in education.

2.5 History of Digital Transformation in Oman

Similar to other nations, Oman also went through stages of digital transformation. These changes also covered the transformation in the education sector, which aims to improve the educational system of the whole country. During the past twenty years, Oman's Ministry of Higher Education reoriented its strategies in resolving different educational issues and challenges. Part of the solution is to implement the e-

government learning system to reach all the areas across the Sultanate of Oman. During those years, the Oman government was also in the process of transforming its services through the improvement of e-governance. This approach was seen as an effective tool for developing public services and contributing to the knowledge-based economy. At the same time, the education sector was also making its share to achieve the overall goal of e-governance in Oman, which is to fully transform all sectors by embracing technology through digitalization. For instance, the government developed an educational portal and scaled it across different educational institutions (Nasser, 2019). As the years went by, the educational reforms in Oman did not just involve the utilization of e-governance in the education sector, but it also aimed to develop new strategies to improve the learning environment through the use technology.

2.6 The Different Digital Transformation Teaching and Learning Methodologies from Oman's Perspective

Similar to the global perspective of teaching and learning methodologies through digital transformation, Oman is also constantly developing new approaches to maximize digital technology's benefits in education. Hence, the use of technology across Oman educational institutions continues to grow. Educators in Oman are aware of the benefits and challenges of digitalization in the education sector. Al Hasani and Husin (2021) also stated that the changes in Oman educators' roles were due to the expansion of digital transformation in education. As a result, their teaching methodologies are now dependent on forms of technology used in education, such as the learning management systems and other digital platforms used in conducting online and hybrid classes. On the part of Omani students, the learning methodologies depend on how educators utilize technological tools. For instance, Omani students must learn how to navigate the library online and how to submit and share their outputs online. In essence, students' knowledge of digital technology also increases, which is beneficial for developing their employability skills since being able to navigate various digital platforms is a plus factor for job employment.

2.7 Advantages of Digital Transformation in Education

Digital transformation creates multiple advantages in Oman's education sector. Through digitalized learning, students across the country can access a broad spectrum of information. Additionally, the educators in Oman will have a better approach to tracking and monitoring their students. One of the significant effects of utilizing digital transformation on education is that teachers will have a more practical means to monitor student success. A good example is the use of technology to record the students' works wherein the details can be compared based on the student's previous submissions. It was also noted that STEM students are also using technological tools to collect and analyze data (Elayyan & Al-Shizawi 2019).

Additionally, digital transformation forces collaboration between teachers and their students. Unlike the classroom setting which only establishes collaboration during class discussions, the digital education environment increases collaboration because both teachers and students can communicate anytime, regardless of their geographical locations, promoting collaborative learning. One of the major changes in learning approach in HEIs is the introduction of MOOC (massive open online courses).

The availability of learning materials that closely resembles an in-classroom HEI curriculum in digital form enabled students to access knowledge outside of their institution. For example, a student taking a business course, but wanting to learn Information Technology can do so by means of MOOC. In a study by Ali Al-Harthi and Al Ani (2022), it was found that students taking MOOC have developed significantly higher motivational and metacognitive skills compared to higher education students. In the context of balancing skills in the digital transformation of education in relation to employability, MOOC encompasses a limitless opportunity for learning in the sense that the students are not limited to their HEI curriculum to develop skills. Al Hadhrami and Al Saadi (2021) listed some of the notable advantages of digital transformation in Oman education system which include individualized or personalized learning, an improvement in student's academic motivation and enhanced communication among teachers and peers. On the other hand, shifting to digital transformation requires a suitable level of digital readiness. According to Subramanian et al. (2021), Oman based institutions and businesses can easily achieve sectoral digitalization because of the high number of internet users relative to its population.

The readiness level of Oman in terms of digitalization reflects on the actual readiness level of HEI students in terms of using digital platforms for learning, which in this case is MOOC (Ali Al-Harthi and Al Ani, 2022).

The emergence of MOOC had been advantageous to the HEI students. MOOC offers learning at the student's pace. Thus, it is a flexible learning option, as the students can log on to the MOOC portal whenever and access their chosen course. In addition, the learning materials offered by MOOCs are advocated by seasoned professors across different universities.

Digitalization in education can lead to increased competitivenessa among students and educational institutions. Thus, colleges and universities embracing digitalization can also transform their services and can even optimize their resource utilization through digital means. There are different aspects that must be considered to fully realize the advantages of digital transformation in education. Academicians in the Sultanate of Oman should consider the level of satisfactions among students in terms of their technology utilization to identify the opportunities that can lead to further improvement of digital transformation efforts. Furthermore, it is equally essential to evaluate the effects and benefits of digital transformation on teaching innovation, to see whether there are advantages on the part of educators themselves.

2.8 Challenges of Digital Transformation in Education

Although there are multiple advantages to the digital transformation of education, students and teachers are also aware of the challenges that come with it. One of the good examples of digital transformation is the emergence of e-learning, which mainly involves using various technological tools. The e-learning environment in Oman also transformed students' roles in the learning process. Hence, the challenges related to e-learning are classified as personal, technical, financial and logistics challenges (Al Hadhrami & Al Saadi, 2021). Some of the most common technical challenges include internet connectivity issues and the inability to access online platforms easily. On the other hand, the financial challenges relate to Oman e-learning which include student's inability to purchase the required software and hardware for faster internet service. As for logistics challenges, Al Hadhrami and Al Saadi (2021) said that some Omani students lack the readiness for e-learning and even need more support from home

and school. The personal challenge involves the lack of initiative from the students to enhance their skills.

2.8.1 Oman's Higher Education Regulation on Digital Transformation

Oman's digital transformation regulation aims to ensure beneficial outcomes for all stakeholders hence the Oman government is continually expanding the digital learning and teaching environment. The government had signed an agreement with the technology giant, Microsoft, to further enhance the educational system across the Sultanate of Oman. Based on the report published on Microsoft's website, Oman's Ministry of Higher Education has already signed a strategic partnership with the technology company that aims to transform education. The main goal of this partnership is to empower the Oman educators with the needed skills and technical capabilities to contribute to the students' improved learning outcomes (Microsoft 2020), hence, providing the students with more preparation for their future jobs. Relatively, the country is still holding on to its plans through Oman Vision 2040, the Sultanate's long term plan to achieve its economic sustainability and expansion through digital transformation.

2.8.2 Key Examples of Digital Transformation of Education in Oman that would Boost the Employment Capabilities of Graduates

Digital transformation of education in Oman will lead to better employment capabilities of graduates, as they learn more than just the usual subjects in their respective colleges. Primarily, teaching students using technology through gamification leads to developing various skills needed for future employment (Saini& Al-Mamri, 2019). Digital transformation in education can best be defined as using technology to teach students. In addition, a transformed education also develops the students' writing skills using various technology tools. Another example of digital transformation is the increased utilization of online learning materials and the interaction of students and teachers through learning management systems and virtual classrooms. Thus, education experts also see adaptive learning as part of the digital transformation of education. Many Omani students benefit from this learning and teaching method through promoting personalized lessons, practice activities, readings and formative assessments.

2.8.3 Digital Transformation Trends and Strategies

Various trends are linked to the digital transformation of education, not only in the Sultanate of Oman but also in other countries. Primarily, improved access and accessibility are significant trends in the education sector. Many students have realized that their access to a multitude of information has expanded through digitalization. Even students who are facing impairments find technology as a way to address barriers to information accessibility. Another trend that can be seen in the digitalization of Oman education is the use of virtual and augmented reality, which increases the readiness of students for future employment. According to Al Shuaili et al. (2020), the effectiveness of these technological tools was evident in the geography curriculum in Oman educational institutions. Thus, these tools have also enhanced the Omani students' attitudes toward technology. In most case, strategies to enhance students' readiness are through simulation and using VR tools. Many schools in Oman are now incorporating the internet of things, allowing faculty and students to communicate constantly inside and outside the campus. Colleges and universities are now starting to teach their students the value of digital citizenship so they can understand the essence of online interaction with civility and politeness.

2.8.4 Impact of Digital Transformation on Employability of Graduates in Oman

One of the most notable impacts of digital transformation is the increased digital competence of students. Relatively, a person's competence is directly associated with employability and is even viewed as an interrelated concept (Abelha et al., 2020). In higher education, employability is more than just obtaining a job because it involves different skills, achievements and personal attributes that make the student more likely to get hired and succeed in their chosen profession. Therefore, adequate technology, skills and knowledge would bring more edge to the graduate due to enhanced employability. Furthermore, digital transformation also exposes students to some of the activities they might be working on in a real job. As mentioned, digital transformation will increase the graduates proficiency in technology which are the preference of all the companies in Oman. Digital transformation will increase student's employability due to increased digital literacy (Vrana, 2016).

Future Plans of Oman on Digital Transformation

The government of Oman is constantly looking into different strategies to enhance its digital transformation further. The Sultanate is also looking forward to developing and constructing additional technology infrastructure that can help address current challenges in the full adoption and implementation of the digitalized education system in the country. Through Oman Vision 2040, the same plan structure will be used for the future of education in the country, in which most strategies involve technology utilization. Furthermore, the government is also establishing a partnership with the country's telecommunication companies to improve the network services needed for better implementation of technology-based programs of the government.

3. Conclusions

The employability of graduates depends on their skills and knowledge. Enhancing the current learning and teaching environment can be done in various ways, which include the digital transformation of education. The digital transformation in Oman is similar to other nation's approaches to reforming their education system. There is a global perspective that reforming education will require effective use of technology and the different tools that come with it. Through digital transformation, faculty will have the opportunity to enhance their teaching approach. On the other hand, students will also have the opportunity to access numerous learning materials online. Thus, both the students and faculty can benefit from collaborative learning. Digital transformation enhances the quality of education and is more than just the use of existing technology. Hence, this transformation also covers the learning environment which is significant for motivating students to learn more. However, some challenges are identified in the digitalization of education in Oman which are classified as personal, technical, financial and logistics. Despite the challenges, benefits and advantages outweigh these issues because digital transformation in education provides valuable skills to graduates which enhance their employability skills.

Recommendation

It is recommended to create a venue or platform accessible by all educators in Oman which will assess the educator's technology skills, both basic and advanced, to ensure their readiness for all the challenges of the digital transformation. The government and private education institutions should continually enhance the technology infrastructure

requirement of this ongoing digital transformation to ensure that Oman will offer the best in the world.

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