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Digital skills and employability: what effect on Moroccan economic growth?

BELKHATAB Zineb
Phd researcher, LARETA, Faculty of Economics and Management, Hassan I University, Settat, Private University of Marrakech. Morocco.
zinebbelkhatab@gmail.com

HADDOUCHE Sara
Phd Student researcher. LARETA, Faculty of Economics and Management, Hassan I University, Settat, Morocco.
sarahaddouche@gmail.com

Correspondence address:

Faculty of Economics and Management
Hassan I University
Settat, Morocco

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Abstract:

This article explores the effect of integrating digital skills into the Moroccan education system on the employability of graduates and economic growth. Using semi-structured interviews with employees, civil servants, students, teacher-researchers and educational managers, the study reveals the extensive implications of digitalization for the Moroccan economy. Firstly, analysis of the collected data highlights the crucial role of digital skills in fostering innovation and therefore improving economic growth. Secondly, the study shows the importance of integrating digital skills into the Moroccan education system in order to improve the quality of teaching and the professional integration of graduates in the digital sectors. Despite these encouraging results, the study highlights the challenges associated with integrating digital skills into education, particularly concerning infrastructure, teacher training and equitable access, and emphasizes the importance of putting in place strategic policies and investments to ensure effective integration.

Keywords: Digital skills, employability, economic growth, Morocco, human capital.

Introduction

Confirmed by most theoretical and empirical works, human capital is a fundamental element for sustained economic growth, and its qualitative aspect has strong repercussions on the country's economy. This aspect is represented by knowledge and skills, including digital skills, which are currently necessary in this current context of strong use of NICTs in all areas.

Indeed, the advancement of digital technology has brought about significant changes in the way people live, learn and work. In Morocco, as around the world, the integration of digital skills in education has become a priority in recent years as a means of strengthening the employability of young people, especially those who face significant challenges in finding and maintain adequate jobs.

The Covid-19 pandemic has highlighted Morocco's shortcomings in terms of digital skills and digitization. Digital infrastructure and services are crucial for maintaining social and economic activities and ensuring the continuity of vital sectors during the pandemic. Nevertheless, the pandemic has also exposed inequality and the digital divide, particularly in rural areas and among the most vulnerable groups. The pandemic has revealed the importance of digital transformation in many economic sectors, such as health, industry, education and finance.

Our work aims to answer the following question: "To what extent does the integration of digital skills into the Moroccan education system affect the employability of young graduates, particularly in sectors with a high demand for digital skills and contribute to the country's economic growth?". Our research aims to provide insight into the triangular relationship between digital skills, employability, and economic growth, and identify the factors that contribute to the development of these skills.

To answer this question, we will follow a qualitative approach by organizing semi-structured interviews with a representative sample of employers, teachers and young graduates. The thematic analysis of the collected content allows us to understand the importance of integrating digital skills into the educational system to prepare future generations for the rapidly changing digital world, and to promote the adoption of digital technologies in various sectors of the economy.

1. Government initiatives to develop digital skills in morocco

As part of its commitment to strengthening the digital economy and skills, the Moroccan government has launched several initiatives aimed at improving the digital literacy of its citizens, civil servants, students, teachers and educators. These initiatives include:

1. "Maroc Numeric 2013": the aim of this project is to make Morocco a dynamic emerging country in the field of information technologies and to strengthen its competitive advantages. Efforts have been focused on modernizing infrastructure and putting in place policies and regulatory frameworks, in order to lay the foundations for digital development and create the conditions for subsequent projects such as "Maroc Numeric 2020" and "Maroc Numeric 2025", which aim to generate a strong development dynamic through the introduction of e-governance services (OECD, 2018).
2. The creation of Morocco's digital transformation center: this center aims to improve the quality of public services and the competitiveness of the economy, and to reduce social inequalities. It focuses on promoting start-ups and digital entrepreneurship, fostering local innovation ecosystems, and strengthening the key digital skills of Moroccan citizens.
3. The adoption of a whole-of-government digitalization approach, enabling Morocco to fully leverage the advantages of ICT for achieving the Sustainable Development Goals (SDGs) (OECD, 2018).
4. The creation of the Digital Development Agency (ADD) by the government in 2019, to implement the "Digital Morocco 2025" national plan, focused on overseeing cross-functional digital programs and promoting digital in the Moroccan economy (UNDP-UNCDF, 2022). The agency has identified five priority areas to work on, namely encouraging research and development, fostering social and entrepreneurial innovation, and ensuring responsible and sustainable digital inclusion, by adopting a participatory approach with all stakeholders.
5. The implementation of policies and regulations that strongly emphasize facilitating the digital economy (UNDP-UNCDF, 2022). Despite these initiatives, Morocco faces a challenge of a digital skills shortage at all levels, with only 48% of the population being digitally proficient and lacking basic to advanced digital skills.
6. In collaboration with Oracle, Morocco is trying to develop digital skills in higher education, supporting the country's commitment to becoming a key producer of digital solutions (Morocco World Neiws, 2023).

7. Morocco aims to develop Efforts are underway to develop digital skills among public servants and managers, identify their skill needs, and consider creating specific digital policies to exploit the digital interconnectedness of its citizens (OECD, 2018).
8. LafargeHolcim Morocco's "Connected Classrooms" initiative is designed to combat school dropout and promote local education, as well as providing students with access to electronic educational resources (Resilient Digital Africa, 2024).
9. Morocco is partnering with 12 universities in a program to train 22,500 digital experts by 2027, by launching 144 new digital training courses. These are organized in the form of innovative training sessions to strengthen the country's position and meet the needs of the digital sector (Resilient Digital Africa, 2024).
10. The Ministry of National Education, Preschool and Sport has set up a digital laboratory, the Digital Lab, to improve the quality of learning and the performance of educational establishments by developing innovative digital tools and modernizing infrastructures (Resilient Digital Africa, 2024).
11. The National Plan for Accelerating the Transformation of the ESRI Ecosystem (PACTE ESRI 2030): is a national plan that aims to accelerate the transformation of the higher education, scientific research and innovation ecosystem in Morocco. It aligns with the priorities of the New Development Model and aims to propel Morocco among the pioneering nations in innovation and academic and scientific added value. The objective of this plan is to develop digital skills, encourage innovation and promote the economic and social integration of graduates (Enssup, 2022).
12. As part of the #AfricaInMotion campaign, Ericsson has signed memorandums of understanding with major Moroccan universities to strengthen their partnerships in the areas of information technology skills development. The idea of the program is to offer young talents in Morocco learning and career development opportunities, providing students with training and mentoring through industry specialists, as well as access to Ericsson Educate, a digital skill portal (Ericsson, 2022).

In summary, all these initiatives implemented by Morocco aim to encourage the development and strengthening of digital skills for a better future. They contribute to sustainable economic growth and the creation of a more connected and competitive society (Resilient Digital Africa, 2024).

2. Digital skills, employability, and economic growth: a literature review

Several studies have shown that the integration of digital skills within the Moroccan education system significantly impacts the employability of young graduates, particularly in sectors with high demand for digital skills, and contributes to the country's economic growth.

In Morocco, digital skills have a significant impact on the employability of graduates. Today, Moroccan companies need to attract profiles with digital skills to ensure their viability and competitiveness. Thus, the acquisition of digital skills can increase the chances of professional integration and career development for graduates in Morocco (Jalbout and Farah, 2016).

These skills are also a selection factor for recruiters. They represent a threat to young students and can also be detrimental to their professional careers. Failure to master these skills can lead to the social and professional exclusion of graduates. Developing these skills appears to be the best way to fully capitalize on these innovations and make them a lever for "quality work, value creation, and personal fulfillment." (Benali and Mak, 2022).

Digital skills provide companies with a competitive edge. They are the key to remaining competitive in a fast-changing digital economy. They lead to the governance of resources in educational establishments, which has a direct impact on the employability of graduates (Benali and Mak, 2022). Thus, the integration and mastery of digital skills by teachers and educators plays an important role in improving students' results and therefore their integration into the job market (Mazouak and Lamniai, 2021). In addition, mastering digital skills can improve the managerial practices of educational managers and directors, resulting in effective and efficient management (Mazouak, 2019).

Similarly, these digital skills not only have a direct impact on the employability of graduates, but also have a long-term impact on the country's economic growth. Indeed, the digital sector can promote economic growth through better access to employment and improved cross-cutting organizational skills (Abdelkhalek and Al., 2021). This underlines the need for major reform of the Moroccan educational system to meet market demands (Digital Talent Review (2021); Qostal and Al., (2024)).

Overall, the integration of digital skills into the practices of students, teachers, educational managers, and directors undoubtedly contributes to sustainable economic growth. In what follows, we set out the methodology used in our work and the results obtained.

3. Research methodology

Our research methodology is founded on employing semi-structured interviews with teachers from both public and private sectors, students, and employees. The primary objective of these interviews is to gather essential data to provide a comprehensive analysis of our research question.

The qualitative approach of semi-structured interviews used in our research offers various benefits. It enables us to:

- Adapt questions based on the participant's responses, allowing for a deeper exploration of the discussed themes (CNNITAT, 2023).
- Acquire precise information through the possibility of interaction between the interviewee and the interviewer (Quivy and Van Campenhoudt, 2006).
- Focus the discourse of the interviewees around predefined themes (Laforest and Al., 2011).

Although semi-structured interviews provide numerous advantages in terms of the richness and depth of data collected, they also have potential drawbacks such as interviewer bias, a significant demand on time and resources, and a subjective interpretation of data (Quivy and Van Campenhoudt, (2006); Chevalier and Meyer, (2018)). To address these issues and ensure a thorough understanding of the phenomenon under study, we have adopted a purposive sampling method. This method involves selecting interviewees based on their experience rather than their characteristics. Therefore, they must meet certain selection criteria (Bryman and Bell, 2015), including years of experience, area of activity, and whether they belong to the private or public sector.

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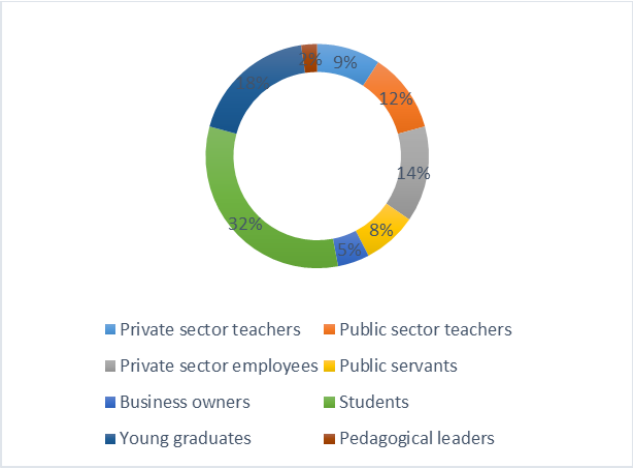
In this research, our sample consists of:

Figure 1. Composition of our sample (220 interviewees)



Source: Authors

In the following section, we present the findings and discuss the impact of integrating digital skills in the educational system on employability and subsequently, economic growth.

4. Results and discussion

To analyze our collected data, we conducted a thematic analysis of the content of the interviews. This approach involves creating themes to adequately analyze and understand the phenomenon being studied.

In our research, the thematic analysis highlights the main issues related to the integration of digital skills into the Moroccan educational system and its impact on the employability of young graduates and the country's economic growth. It emphasizes the strategic importance of this educational transformation while identifying the challenges that must be addressed to ensure its success.

Indeed, employees, students, research professors, and pedagogical leaders were interviewed. Therefore, we structured the interview guide around the following themes:

4.1. Theme 1: Impact of Digitalization on Morocco's Economic Growth

Without exception, all teachers and business leaders interviewed emphasized the importance of digitalization for sustained economic growth. Indeed, digitalization is considered a key driver of economic growth because it stimulates innovation, productivity, and business competitiveness.

Digital skills enhance the competitiveness of Moroccan businesses by integrating new technologies that can improve productivity and reduce costs. A significant focus should be on workforce development, emphasizing digital literacy and upskilling the current workforce to adapt to new technologies in their roles. Consequently, a digitally skilled workforce can attract more foreign investment, especially in the technology and services sectors, which boosts economic growth. The integration of digital technologies in sectors such as agriculture and manufacturing can also increase their efficiency and productivity.

Participants described the transformative effect of digital skills on the Moroccan agricultural sector, where mobile applications that provide real-time data on weather and soil conditions have significantly increased agricultural yields.

Similarly, in the tourism sector, digital marketing skills have played a major role in increasing the visibility of hotels, guest houses and tourist attractions, and improving their competitive positioning.

Respondents also affirmed the importance of investing in digital infrastructure for faster and more effective economic transformation was also affirmed by respondents. However, they noted that the extent to which skills will influence a country's economic growth will depend on the state of its digital transformation. Our country, having made recent progress in this area, could benefit significantly.

The government plays an important role in creating the right environment for digital growth by encouraging innovation and driving digital adoption. Teachers surveyed believe that collaboration between government, private companies and educational institutions is essential to drive digital transformation and ensure that education is tailored to the needs of the digital sector.

Beyond the technological aspects, digitization also involves organizational and social changes within businesses and society, which have an impact on economic growth. By reducing the digital divide and providing equal access to digital tools and opportunities, promoting digital inclusion ensures that digitization benefits all segments of society. However, they noted that the extent to which skills will influence a country's economic growth will depend on the state of its digital transformation. Our country, which has made recent progress in this area, could benefit significantly.

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4.2. Theme 2: Importance of Integrating Digital Skills into the Moroccan Educational System

The interviewees confirm that the digital economy is growing rapidly, and there is a strong demand for professionals with digital skills in various sectors such as information technology, marketing, and communications, which means that IT is becoming a significant employer for young graduates in Morocco.

The growing importance of digital skills is enabling the government to create digital learning resources to improve the low level of access to education, especially in remote areas, and to reduce the gap between higher education and the research and skills needs of the knowledge economy.

The teacher-researchers who took part in our interviews spoke of their direct experience of using interactive whiteboards in the classroom. Thanks to these digital practices, they have observed a significant improvement in pupils' level of engagement and understanding of difficult subjects.

Likewise, the interviewed students expressed their positive reactions to the integration of digital skills in their educational programs, with initiatives such as Connected Classrooms and Digital Lab aiming to improve the quality of learning and the performance of educational institutions by developing innovative digital tools and resources. Such initiatives have had a significant impact on e-learning in higher education, which is becoming increasingly crucial to the educational policies of Moroccan universities.

Integrating digital skills into the Moroccan education system contributes to the country's economic growth by preparing young graduates for the demands of the digital economy. This preparation includes developing the technical and general skills needed for the evolving job market. It can provide significant economic benefits, including:

- **Enhanced productivity and competitiveness:** By equipping students with digital skills, Morocco can improve the productivity and competitiveness of its workforce, making it more attractive to foreign investors and enabling local businesses to thrive.
- **Development of the digital economy:** Integrating digital skills into education can help Morocco develop its digital economy, creating new opportunities for businesses and entrepreneurs in the information and communications technology (ICT) sector.
- **Improved access to public services:** Digital skills can enable citizens to access public services more easily, thus improving the efficiency and transparency of government processes.
- **Social inclusion and job creation:** By providing digital skills training, Morocco can help bridge the digital divide, ensuring that all citizens have equal access to opportunities and contributing to the creation of new jobs in the digital sector.
- **Modernization of infrastructure:** Digital transformation can help modernize infrastructure, promote innovation, and foster the growth of the digital economy.

By integrating digital skills into the education system, Morocco can create a more competitive, innovative, and inclusive economy, contributing to sustainable economic growth and a more connected and competitive society.

In summary, Morocco is actively working to integrate digital skills into its education system, focusing on primary and higher education. Although significant progress has been made, challenges such as the digital divide and aligning practices with digital integration goals remain.

Pedagogical leaders and research professors discuss the long-term changes needed to support the integration of digital education. They talk about curriculum reforms, the need for continuous professional development for educators, and the integration of advanced digital tools into research and teaching. Students provide feedback on the impact of these changes on their learning experience and preparation for the job market.

4.3. Theme 3: Impact on the Employability of Young Graduates

Business leaders interviewed confirm that digital transformation, automation, artificial intelligence, robotics, blockchain, and other technologies are expanding to encompass all economic activities and will doubly change the structure of the job market. Therefore, it is essential that workers in all sectors acquire and strengthen their digital skills to remain competitive in the job market.

Several business executives reported that they now prioritize candidates with digital certifications during hiring. They cited cases where young graduates with these certifications were able to secure high-quality jobs with international companies. Moreover, a career advisor from a private university mentioned a program that collaborates with tech companies to provide internships, often leading to full-time positions, highlighting the practical benefits of digital skills.

Interviewees confirm that digital skills enable young graduates to meet the specific needs of rapidly growing sectors such as finance, digital marketing, and IT, where demand for technological skills is high. Business leaders also noted how digital proficiency has empowered Moroccan graduates to participate in the gig economy, offering their services globally and creating new income streams.

Responses from research professors emphasize the crucial role of partnerships with the private sector in enriching digital education. They suggest collaborations that bring contemporary industry practices into classrooms and discuss internship programs that enable students to gain practical experience. Thus, digital skills are essential for Moroccan workers to adapt to evolving job requirements, as digital transformation and automation redefine traditional jobs.

Furthermore, when interviewed, pedagogical leaders emphasized the importance of adapting the curriculum to include new digital skills, in order to prepare students to adapt to evolving technology. Morocco's government and businesses should develop training programs to improve the digital skills of Moroccan civil servants and employees, identify their skill needs, and consider creating specific training programs to enhance their digital competencies.

In conclusion, digital skills offer significant advantages in the Moroccan labor market, as they can contribute to better access to public services, enhance employability, adapt to market demands, bridge the skills gap, strengthen the digital competencies of workers in all sectors of activity and seize outsourcing opportunities in the digital and technology sector.

4.4. Theme 4: Challenges and Obstacles in Integrating Digital Skills

In order to integrate digital skills into their teaching, teachers have identified the following challenges:

- **Lack of Digital Skills:** Teachers may not possess the necessary digital proficiency to effectively incorporate technology into their teaching techniques. Targeted training programs can assist teachers in developing their digital literacy and build confidence in using technology in the classroom.
- **Infrastructure and Resource Challenges:** this includes limited access to high-speed internet and reliable electricity, which hinders the effective use of technology in classrooms and restricts the access of teachers to digital resources. The Moroccan government is working to reduce the digital divide by investing in digital infrastructure, training teachers and students to improve their proficiency in digital technologies and providing reliable technological resources. Additionally, the lack of essential resources such as e-books, educational apps, and videoconferencing hinders the integration of technology into teaching. The government is tackling these challenges by centralizing the creation and distribution of educational resources, ensuring that all students have access to high-quality, up-to-date materials, regardless of their socioeconomic level or location.
- **Traditional Teaching Methods:** It can be challenging for teachers to abandon their traditional teaching methods and adopt more modern and interactive pedagogical approaches. This entails a shift in teaching techniques and a focus on student-centered learning rather than relying solely on traditional textbooks.
- **Limited Training Opportunities:** Teachers may not have access to sufficient training opportunities to develop their digital skills and pedagogical approaches. Providing opportunities for professional development and continuous training can help teachers stay updated with the latest technologies and teaching methods.
- **Lack of Support:** Teachers may lack access to the necessary support and resources to effectively integrate technology into their teaching. This could include technical support, pedagogical support, and access to a community of practice to share best practices and resources.
- **Resistance to Change:** Teachers may resist changing their teaching methods and integrating technology into their teaching. To address this challenge, it's essential to

focus on gaining teacher buy-in and promoting a culture of innovation and experimentation in the classroom.

In summary, the students and teachers interviewed shared the challenges related to inadequate internet connectivity and a lack of proper equipment, which hinder the effective integration of digital teaching. They expressed the need for increased government support in terms of infrastructure and training to fully utilize digital teaching tools. Moreover, an administrator from a public university discussed the bureaucratic hurdles to updating curricula to include more contemporary digital skills, emphasizing the need for a more agile approach to educational reform to keep pace with technological progress.

Discussions with interviewees highlight disparities in digital literacy. Students often report fewer opportunities and resources, which is echoed by their teachers. Pedagogical leaders discuss the strategies and challenges of deploying digital education tools across diverse geographic locations, stressing the need for government and non-government programs to address these inequalities.

Thus, the interviews show varied societal views about digital transformation. While students are generally more enthusiastic about embracing digital technologies, teachers and pedagogical leaders discuss the broader societal resistance and the challenges it presents. They emphasize the importance of community engagement programs to educate and reassure the public about the benefits of digital adoption.

Policy discussions with pedagogical leaders and research professors focus on the need for robust digital governance frameworks. They emphasize the importance of updating policies to keep pace with technological progress, ensuring data security, and protecting privacy. Tech industry employees discuss the practical implications of these policies on businesses and the importance of having clear regulatory guidelines.

Conclusion

The relationship between digital skills, employability and economic growth is complex and interdependent. Digital skills are fundamental to employability in today's job market, and developing these skills can contribute to economic growth.

The following factors contribute to the development of digital skills:

1. *Education and training:* Providing quality education and training programs focused on digital skills can help people acquire the skills needed for the job market. This includes professional training, professional development and higher education programs that integrate digital skills into their curricula.
2. *Government policies and initiatives:* the government can play an essential role in promoting the development of digital skills by implementing policies and initiatives that support digital literacy and education. This comprises funding for digital skills and training programs, incentives for businesses to invest in digital skills development, and regulations that promote digital inclusion.
3. *Workplace culture and practices:* By creating a culture that emphasizes continuous learning, employers can support digital skills development in the workplace. This comprises providing employees with opportunities to develop their skills through comprehensive training and development programs, encouraging the adoption of digital tools and technologies in the workplace, and acknowledging and rewarding employees who excel in their digital competencies.
4. *Access to technology and infrastructure*: This includes access to high-speed internet, digital devices and software applications. Governments, businesses and communities can work together to ensure everyone has access to the technology and infrastructure needed to develop digital skills.
5. *Collaboration and partnerships:* Collaboration and partnerships between governments, businesses, education providers and community organizations can help promote the development of digital skills. This includes sharing best practices, resources and expertise to develop and deliver digital skills training programs that meet the needs of individuals and employers.

In conclusion, the development of digital skills is essential for employability and economic growth. However, the challenges are numerous. On the one hand, it is essential to develop effective communication and information infrastructures to support access to the internet and continuing education. On the other hand, it is crucial to promote a digital culture that encourages innovation and adaptation to new technologies. Finally, it is important to put in place public policies that encourage investment in education and training, as well as initiatives to encourage entrepreneurship and innovation in digital-related sectors.

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