

Harnessing the Digitalization for Society's Sustainable Development: A Call for Shared Theoretical Conversation about (DESI) and the Development of Arab Nations

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ABSTRACT: The use of technologies and digital devices impose technical advancement to every country. Today, where everything in the world is about the "e", we may assume that the digitalization has spread its wings over all the spheres of life. Therefore, the socioeconomic growth parameters depend on the revolution of digitalization. This one has open new ways for developing the function of public services domain in interaction with community. Accordingly, societies are highly empowered by the use of "the need of now" built more connected and conscious comparatively to less digitalized countries. In fact, the digitalization seems to be the most significant feature to lead towards sustainable development. Which highlight the concept of "inclusive growth and economy" along its four major pillars «economy », « living conditions », « equality » and « environment ». That being the case, this paper aims to highlight up front the steps for digitalization to be held in a country considering its implementing conditions. Then, comparing the societies competitiveness level using the (Global Competitiveness Index) throughout shortcomings and good practices included in sustainable development concrete measures. After that, examining the (Digital Economy and Society Index) methodology in (EU countries) throughout its components (Economic, social and environmental) and discussing its possible implementation abroad under the lights of Hofstede's cultural performance dimensions. Subsequently, developing countries are under the scope for their citizens under the wall of poverty, unemployment and illiteracy building a strong bridge of connectivity with the nation. So that the metamorphosis from tremendous economic growth to prosperous nation be insured. All of that to make the world a better place.

KEYWORDS: Sustainable development, digitalization, inclusive growth, civil society, digital technologies.

"The future belongs to those who prepare for it today"

Based on the speech of Malcolm X's Speech at the Founding Rally of the Organization of Afro-American Unity, 1964) and also cited in (Bhutani and Paliwal, 2015)

1. INTRODUCTION

Through the decades the dimensions of the years change but the horizon of its lens increase. The human being knew an evolution through the time from a peripatetic man to a civilized social being in a floatable environment economically and socially. The main radical change shaped the society nowadays including the public services domain knowingly administrations, transport, education, medicine and banking, et cetera... Anecdotal evidences : *Fleet vehicle use digital GPS devices that direct them to shorter routes cutting down on their greenhouse gas emissions; healthcare services send text messages to pregnant women with advice on prenatal care, creating a healthier new generation before children are even born.* So, with the development of technology, every country assumes its costs no matter how low or greater they might be. Consequently, this topic covers many questions such as :

- What are the main steps for a country to be digitalized ? - What is the link with society's sustainable development ? - What is the definition of an inclusive digitized society ? - How to examine a society's competitiveness ? - What is the DESI and how EU countries use it to explain society's performance (What about GCC countries) ?

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To answer these questions, we examined the digitalization and its harnessing for the main sustainability components such as economy, society and environment. Then, we've explained numerous indicators to measure a society's competitiveness and various methods to measure a nation's performance. The major hypothesis of our work is : The digitalization affects sustainable development positively. So that we confirm this hypothesis, we've examined the DESI comparatively to all the indicators that measure sustainability dimensions. Our current time is marked by the " network". Which is well explained in Castells's book " the rise of the network society".

2. LITERATURE REVIEW

The turbulence of the environment nowadays highly recommend the intervention of aspects to make difference between societies. Each decade the universal context impose for societies to float using specific tools. Nowadays, the environment is strongly dependent on technological capability. Through the modern economy, the digital one has emerged. This qualitative transformation of society lead to a strong change in the social structures and the economic systems. Historically, the world went through revolutions. The first one was the industrial revolution in the 17th decade, knowing by machines and new industries (1760s). Then, followed by the second revolution including the emergence of electricity which encouraged the production (Late 19th and early 20th century). After that, the third industrial revolution appeared such as the digital revolution. Since then, the "e" world has emerged with internet and computers. Nowadays, we live in the area of Artificial Intelligence (AI) which is considered as the fourth industrial revolution. It involves the internet of things and the machine learning. Nowadays we are living in the area where digital solutions are leader for each country to become performant and competitive. The aim of this participation is to showcase the scenario of digitalization and its impact on nations to attain inclusive growth.

2.1. What are the main steps for a country to be digitalized ?



Figure 1 : The metamorphose of a digitalized nation

Source: adapted by Bhutani and Paliwal / OIDA International Journal of Sustainable Development (2015)

The world has known transformational phases traced throughout different stages. Starting with the World Wide Web as a new boom in 1980's. it has changed due to digital devices and internet adoption. A lot of promising and privileged opportunities in different fields emerged. Since then, connectivity has become an important criteria for greater socio-economic growth. The use of personal computers in the worldwide has increased exponentially also Cell phones become "smart phones" with more than 564,13 million user in Sub-saharian Africa in 2022. Actually, the number of internet users grew at more rapid rate in the world. In Africa as well, the continent had around 570 million internet users in 2022. A huge number that doubled compared to 2015.

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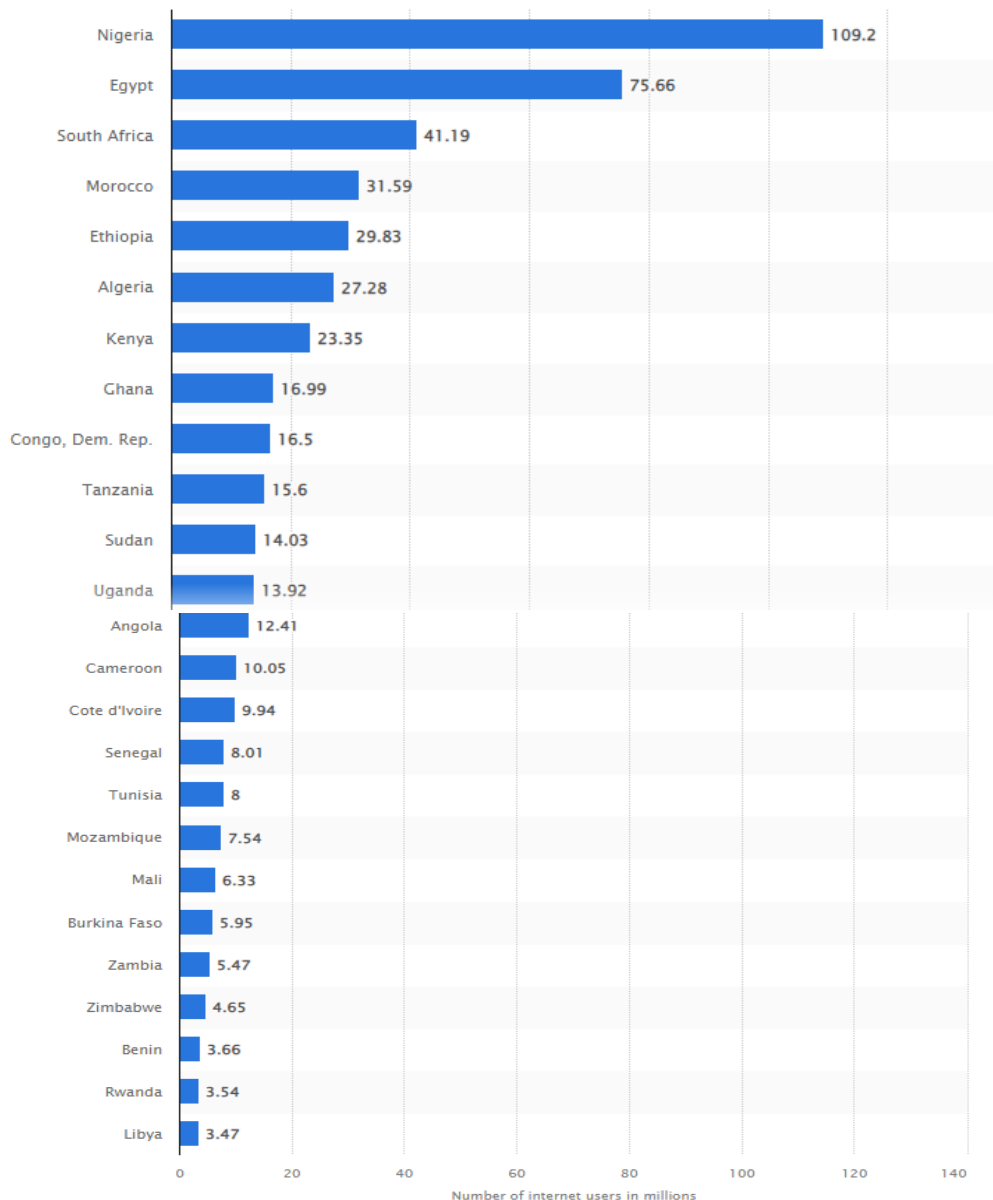


Figure 2 : Number of internet users in Africa as of January 2022 by country

Source : <https://www.statista.com/statistics/505883/number-of-internet-users-in-african-countries/>

This revolutionized period is characterized with huge amount of informations that need to be communicated. This aspect register the society as digitalized. The interaction of human within it needed ways to facilitate communication, services but also commercialization. Therefore, the use of internet has simplify these procedures to make the human being well informed and socially empowered. Through these factors, society can be ready to make a step toward sustainable development. Importantly, digitalized society doesn't refer only to the relationship mediated by cellular communication and internet. But also, the changes in terms of business interaction with the destruction of mediators, the acceleration of different transactions, providing access to health informations and options, increasing access to social services and benefits, improving education and learning, reducing costs, strengthening social ties through the notion of Crowd. New business practices emerges such as Crowdfunding, freelance and Crowdsourcing. Therefore, Schumpeter explained this metamorphose through the waves of innovation. He claimed that the length of each wave become short due to new technologies (including digital networks, software and new media). So since 1990, we are living in the 5th wave.

Digitization vs. digitalization

This figure highlights the internet searches of digitization and digitalization and it seems nearly in parity. Since the augmentation of digitization leads to high digitalization. In fact, digitization as defined by (Gartner Glossary) in his book "A very short history of digitization" is "The process of changing from analog process and changes it to a digital form without any different-in-kind changes the process itself"(such as scanning a photograph or convert a paper report to a PDF. Thus, the digitalization refers to

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moving existing processes into digital technologies. Simply, this latest is about processes and the digitization is about information. This digital transformation is clearly seen within companies and enterprises. Most of them adopt all the digitalization practices (investing in technologies) to stay ahead of the curve.

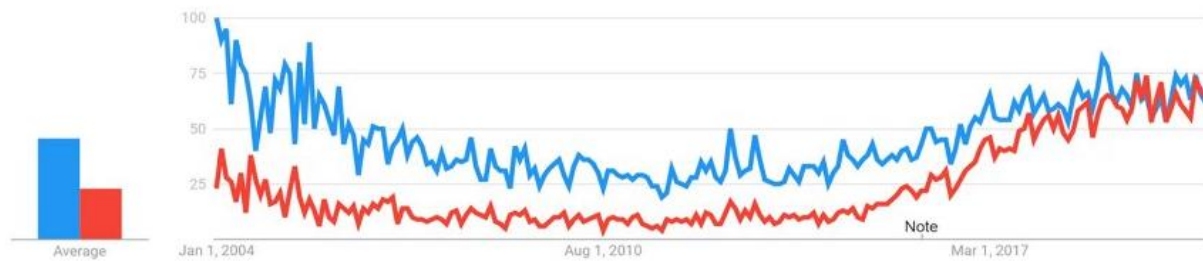


Figure 3: Parity in internet searches of digitization and digitalization (From 2004 to 2020)

Source : Google Trends, 2020

2.2. What is the main link of digitalization with society's sustainable development ?

As a new game changer, digitization has changed the way of shaping the world. "Digital representation" is a new title given to the change from physical world to another form or media. Admitting that, this era of digital transformation appeals application of new digital capabilities to products, assets and processes. This change aims to uncover new opportunities, enhance customer value, manage risk and increase efficacy and efficiency in transactions.

Holistic sustainable impacts

Technologies such as internet, big data, artificial intelligence and cloud computing are nowadays new tools to divide societies from developing to developed countries. Therefore, it seems crucial before identifying disparities between countries to mention the notion of "speaking societies". It refers to the level of each society to tackle global challenges such as hunger, climate change, poverty or accelerating the human being. Sustainable development as a notion has appeared in 1978 defined as *the development that meets the needs of the present without compromising the ability of future generations to meet their own needs*. The most asked question recently is about the impact of digitalization or "digital technologies" on sustainable development goals (SDGs). To analyze this intersection, we implement the technology facilitation mechanism (TFM). It refers to the interaction of the civil society's commitment in the accomplishment of best practices. The main actors namely the individuals, the organizations and the nation states represented in the government, the private sector, nongovernment organizations (NGOs), professional associations, foundations, independent research institutes, community-based organizations (CBOs), faith-based organizations, people's organizations, social movements, and labor unions.

The creation of value is solving at heart the relationship between digitalization and sustainable development. Three components are moderating this relationship, as mentioned by (Seghezzeo, 2009; Hasna, 2007; and Mensah, 2019), knowingly permanence (inter-generational justice), place (intra-generational justice), persons (Identity, happiness). The crisscrossing of these components creates sustainability.

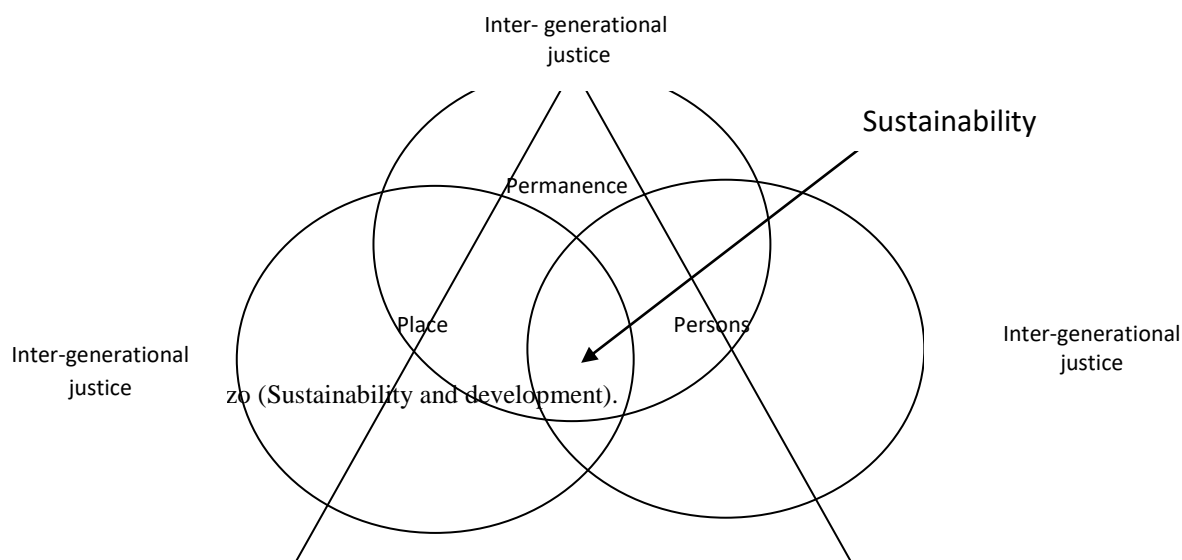


Figure 4 : The dimensions of sustainability

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The concept of sustainable development is too abstract to be applied unless if it is related to another strong notion to be scientifically sufficient and confirmed. Many researchers have investigate in the impact of the culture on the adoption of digitalization using Hofsted framework. This one has been wildly implemented in management, marketing studies, psychology and sociology. Also, it is useful in conducting cross-cultural studies to compare cultures over nations. Using the notion of "Power distance", the digital transformation can be well explained for its usefulness in some countries instead of others (Bochner and hestekch, 1994). This notion explains the inequality and its effects on people's willing to accept and consider it to be proper. In other words, it depends on the society's norms within the institution and its practices (in terms of status prestige, rightsand wealth, ..). Societies might have a large or a lower power distance. Also individualism versus collectivism. The first case refers to the tendency of society wherein individuals are more inclined to looking after themselves and their immediate families rather than the society at large while collectivism refers to a society in which individuals consider themselves integrated into groups (Hofsted, 2011). As digitalization demands a higher network, the societies with higher collectivism and connections succeed in its adoption. Long term orientation is considered also as a significant variable with e-government development. This terms are behind the creation of Google and Facebook. In the digitally sound scenarios, as explained, big data and IoT paved a way on greater advantages in different domains. In business, companies adopt digitalization in order to optimize their resources and costs to develop their processes and technologies. The organization's culture confirm the fact that only culture shapes what we mean by development and determines how people act in the world (Culture 21, 2014). Not only that, but also to determine how the changes will be accepted in the society (Milica Jovanović et al, 2018).

As the main definition of digitalization is *the degree to which a society's goals of growth development and value creation are realized through technology*. Being digital, the society tends to satisfy people needs through all the components of human development in innovative way. The figure bellow showcases the sustainable development goals. New set of opportunities through digital representation have been used to reach them. This enable the economy to reflect new and innovative ways of thinking to attain the value creation.



Figure 5 : Sustainable development goals

Source : The Global Challenge for Government Transparency: The Sustainable Development Goals (SDG) 2030 Agenda

2.3. What is the definition of an inclusive digitized society ?

Dang and Pheng (2015) have explored new theories of economic development. They have described this process as : "*On the way to achieve rapid economic growth, countries around have been exploring their natural resource reserves at alarming rates*". Given that, digitized society was used by Nicholas Negroponte (1995) from the Massachusetts university. Having proven that the digitalization is the ultimate way to increase producing enough goods and services, well being and greater opportunity. All components of sustainable development goals are growing. Therefore, all economic systems are transforming for the betterment of all. Besides growth, different segments of society must take advantage of this growing structures (poor or rich) namely equal access to adequate public goods, services, public transit, clear water and air. Added to equity, participatory economy enable people to access in markets and participate as consumers, workers or business owners. This participation is conditioned with the common knowledge of rules and norms. Technology helps people to insure this participation. Furthermore, the stability of individuals within an economy increase their ability to predict the outcome of their economic decisions. Alongside digitalization

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and technology, economic structures increase the resilience to shocks and to disruptions with excessive impact, especially on poor communities. Given these inter-related characteristics¹, the economy can be called inclusive and digitized society.

2.4. Case study : Qatar, UAE and Saudi Arabia onward to inclusive digitized economy

According to the analysis by strategic gears, UAE and Saudi Arabia will dominate growth in 2023. The Gross Domestic Product (GDP), as an indicator of inclusive economy, hit the SAR 4 Trillion mark. Notably, the Government explains the strategy target of SAR 6.4 trillion by 2030.

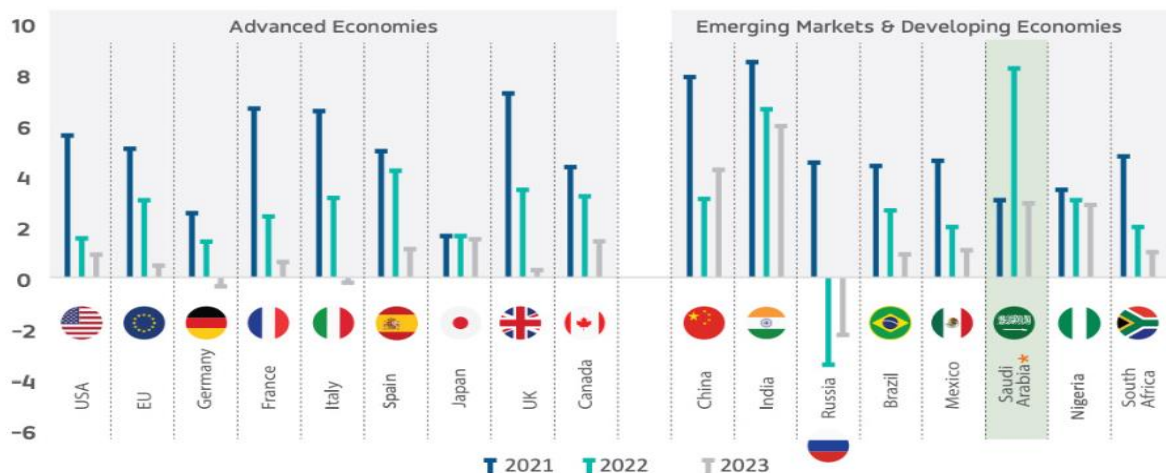


Figure 6 : Real Gross Domestic Product (GDP)

Source : <https://www.consultancy-me.com/news/5683/saudi-arabias-2023-economic-outlook-7-charts-by-strategic-gears>

Looking ahead into 2023 besides the GDP, two other indicators describe the inclusive digitized society such as the Saudi Purchasing Managers Index (PMI) and the Industrial Production Index (IPI). These ones hit the strongest momentum in 2023. The point of sale and the e-commerce of products and services are key component to this growth (figure bellow).

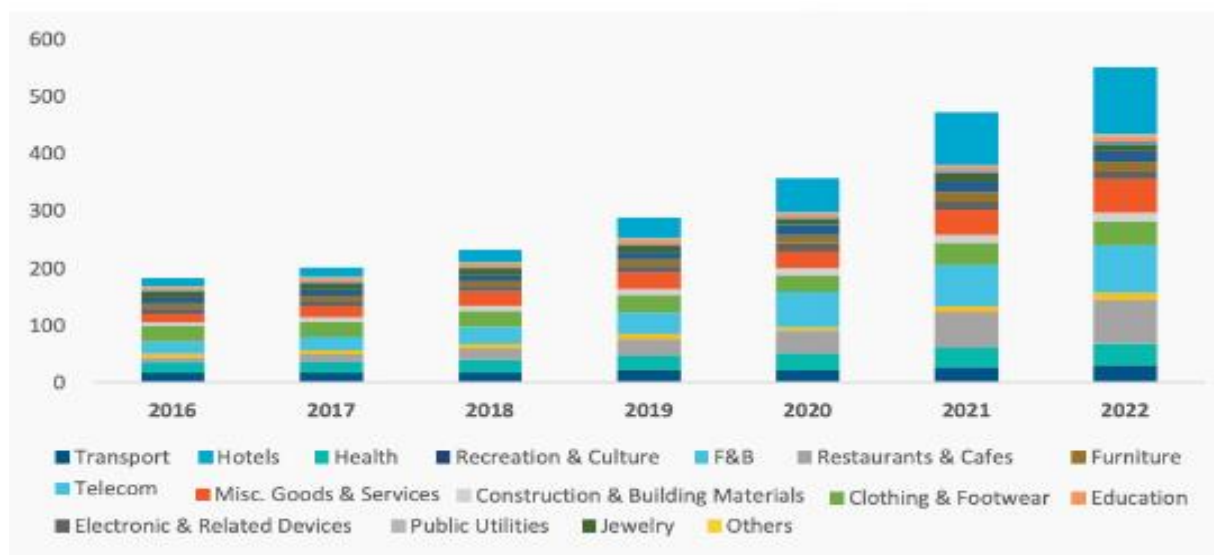


Figure 7 : Saudi Arabia Point of Sale Transaction

Source : <https://www.consultancy-me.com/news/5683/saudi-arabias-2023-economic-outlook-7-charts-by-strategic-gears>

The UAE is also among the global market that improved inclusion within their populations between 2017 and 2020. The strategy "consulting firm" took a dive into more than 80 economies over the globe. This study traces the rate of digital inclusion within societies and the impact of economic inequality. The results showcase that unequal access to digital is increased by inequality within an economy. Four metrics are used in this area : **Accessibility to digital equipment, affordability of digital access, ability to understand digital tools and processes and attitude towards the adoption of digital life.** The figure bellow showcase the ranking of economies based on the level of inclusive digitalization.

¹ Chris Benner and Manuel Pastor (authors of Growth, Equity and Community (2015))

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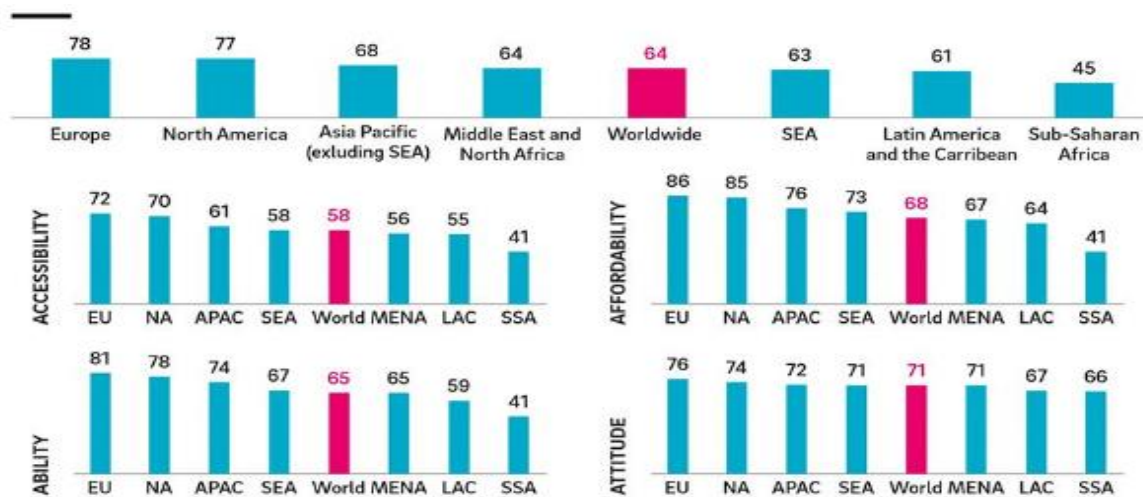


Figure 8 : Regional score for digital inclusion

Source : Index on GSMA, ITU, World Bank, UNESCO, UNDP, Euromonitor (Roland Berger)

In terms of inclusive society, Qatar is the only middle Eastern country to jump into the top ten countries on the overall ranking (Eighth position) while Canada and the UK bring up the last of top ten of the 82 nations assessed.

TOP 10 COUNTRIES		
#1	Singapore	-
#2	Sweden	-
#3	Denmark	+2
#4	Netherlands	-1
#5	United States	-1
#6	Australia	-
#7	South Korea	-
#8	Qatar	+5
#9	Canada	+5
#10	United Kingdom	-2

Figure 9 : Liste of top 10 countries

Source : Index on GSMA, ITU, World Bank, UNESCO, UNDP, Euromonitor (Roland Berger)

Then, UAE is the best country of the rest in terms of regional performance included in top 10 improvers. Strong improvements on economic and social areas of digital inclusion are respected. So, the benefits are as follow : social equalizer by democratizing education and ensuring diversity. Basically, the use of e-government services also inclusive digital platforms for essential services. The governance within these countries tends to betterment due to civic outreach expanded owing to digital inclusion.

TOP 10 IMPROVERS		
#55	Myanmar	+11
#44	Vietnam	+10
#50	Egypt	+8
#14	UAE	+8
#8	Qatar	+8
#74	Zambia	+7
#64	Pakistan	+7
#57	Cambodia	+7
#9	Canada	+7
#37	Iran	+7

Figure 10 : List of top 10 improvers societies

Source : Index on GSMA, ITU, World Bank, UNESCO, UNDP, Euromonitor (Roland Berger)

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This current expanded rates showcase the righteousness of key markets in Arab countries of the Middle East. That being the case, societies competitiveness arises with the widespread of digitalization and new normal in this field.

2.5. How to examine a society's competitiveness?

While noticing the socio-economic transition in these countries. Their performance must be examined. Shultz and Peterson (2017) examined the Sustainable Society Index values with macromarketing activities so as to achieve a sustainable society. In their study, they have concluded the necessity of fostering these activities. with the proliferation of digital technologies, the explosive growth of ICT services presented policymakers with three key challenges; Starting with establishing standard performance indicators to measure the extent to which the ICT is assimilated to a society. Then, the lack of tools to determine the impact of connected technologies on societies. After that, the adoption of new tools for accelerating digitization to enhance competition and promote infrastructure sharing.

Six key attributes² measure the extent of a country's digitization comparatively to others : (1) Ubiquity (referring to the extent and the compass to which enterprises and consumers have universal access to digital services and applications). (2) Affordability (described as the extent to which digital services are priced in a range that makes them available to as many people as possible). (3) Reliability (referring to the quality of available digital services). (4) Speed (Knowing as the extent to which digital services can be accessed in real time). (5) Usability (which means the ease of the use of digital services and the ability of local ecosystems to boost adoption of these services). (6) Skill (involving the ability of users to incorporate digital services into their lives and businesses). Proxy metrics were used and analyzed by the same source to sort societies (A sample of 150 countries on a scale of 0 to 100) from constrained, emerging, transitional to advanced (as highlighted in the figure bellow).

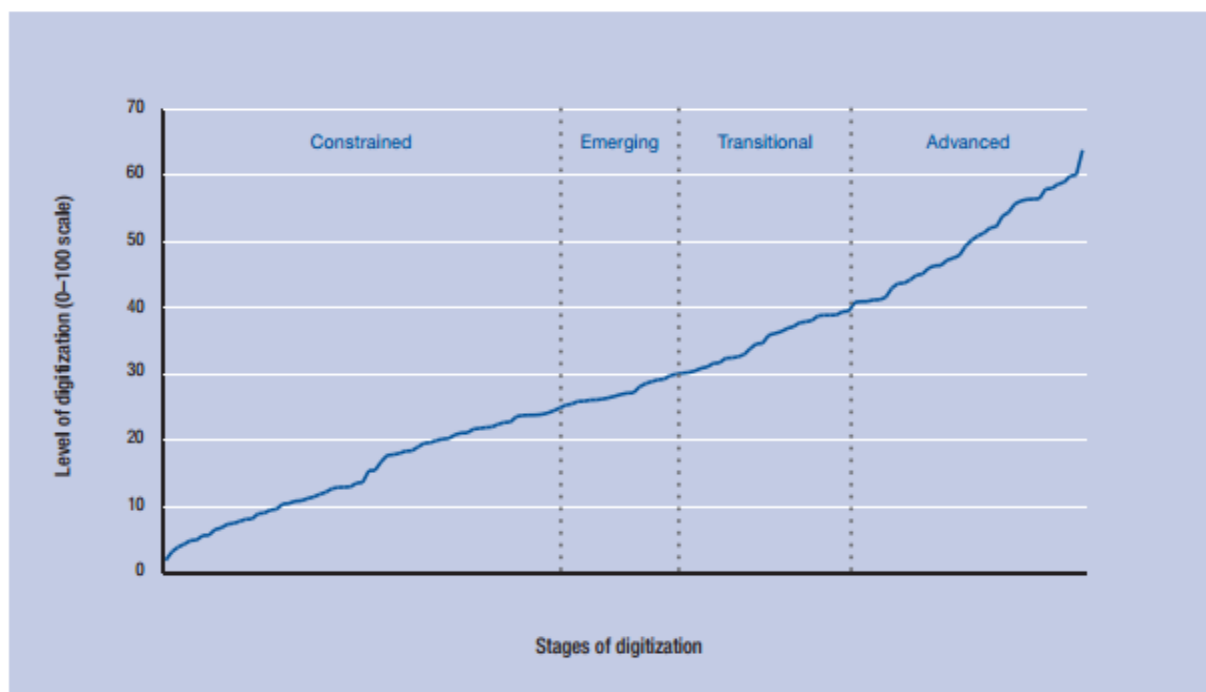


Figure 11 : Sorting of societies in terms of stages of digitization and its level on a scale (from 0 to 100)

Source : The Global Information Technology Report 2012

The measure of digitization socioeconomic impact is based on three main components namely economy (which is measured by the impact of digitization on the growth of economy : GDP Growth, Job creation and Innovation), society (which is measured by the impact of digitization on the society wellbeing of a country : Quality of life and access to basic services) and ultimately governance (which is measured by the impact of digitization on public sector : Transparency, E-government and Education).

The competitive societies are described by the acceleration stems from all these factors. It is the measure of each component that sort the country comparatively with the other. Also called, advanced countries; they are the most mature stage of civilization. They have committed with significant strides in addressing ICT usability and they have developed the availability of technologies, products and services but also improved the quality of digital services. Transitional economies are the countries that respect the ubiquity, the affordability and the reliability of services but the speed of usability is minor. Then, emerging societies are characterized with limited abilities in the capacity and the reliability of services. While constrained economies face too many

² Data from ITU, Ovum, Euromonitor, Akamai, ILO (Laborsta), Global Insight, UN, WCDM, Webometrics, Bgexpert, Internet World Stats, UNESCO, Wireless Intelligence, and Telecom Advisory Services; Booz & Company analysis.

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challenges related to the widespread access to digitalization and the expensiveness of its services. Knowing the advantages of harnessing digitalization for sustainable development, the Arabic societies are moving toward the advanced stages of digitalization and digitization.

For a society to be competitive, five imperatives are crucial to respect for both economies - economies with advanced stage of digitization and - economies with transitional, emerging and constrained stages of digitization. Societies implement these imperatives based on their current stage of digitization.



Figure 12 : Imperatives for enhancing societies competitiveness and performance

Source : World Economic Forum (2012)

After showcasing the competitiveness of societies and the main important stages in terms of their current level of digitization. Policymakers are in the scope to look with fresh eyes at policies to adopt and the right investments to focus on in order to ensure advancement to the next stages. Thus, another measure of digitalization performance and its link with sustainable development and competitiveness is to mention namely DESI (The Digital Economy and Society Index).

2.6. What is the DESI and how EU countries use it to explain society's performance ?

What about Arab nation ?

Related to digital competitiveness and performance of societies, the (DESI; Digital Economy and Society Index) intervene as a composite measure that summaries indicators in this field but only of the EU member states. It summaries Europe's performance and tracks its progress.

A set of indicators compound this index according to the European commission (2017). Three layer structure compose it, starting with five indispensable dimensions namely : Connectivity, Digital skills, Use of internet, Integration of digital technology and Digital Public Services. Then, the second level has 12 sub-dimensions. Finally, the third level has 31 individual indicators. With the evolution of technology, the index of DESI changes in terms of the methodology of calculation (e.g taking 4G coverage in consideration in 2016).

The structure of the index is as following in 2017 (figure 13) :

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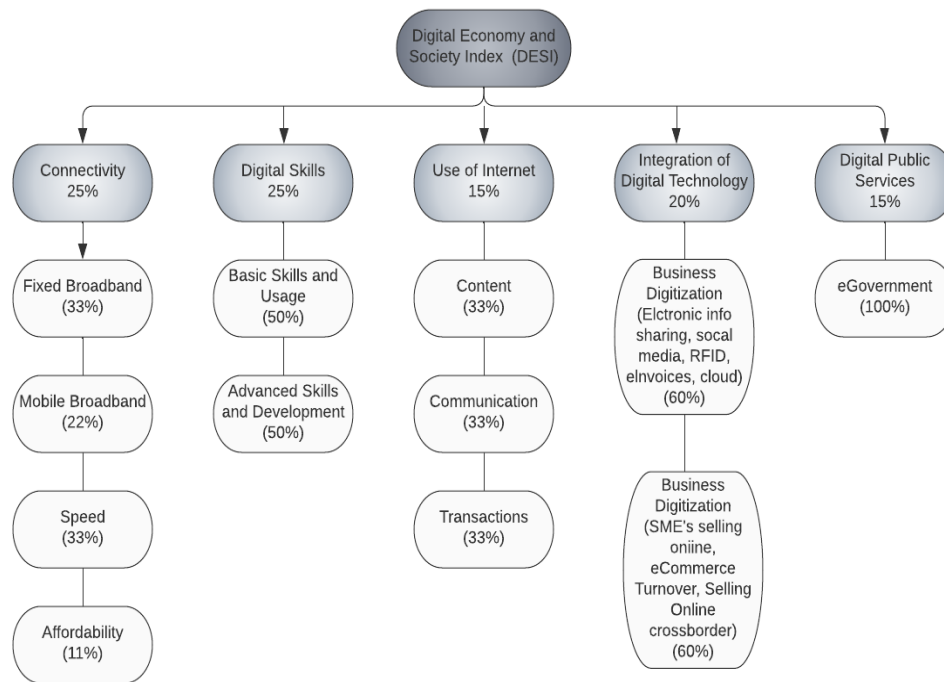


Figure 13 :DESI structure
 Source : European Commission (2017)

Tableau 1 The structure of DESI

Dimension	Sub-dimension	Indicator
1 Human capital	1a Internet user skills	1a1 At least basic digital skills
		1a2 Above basic digital skills
		1a3 At least basic digital content creation skills
	1b Advanced skills and development	1b1 ICT specialists
	1b2 Female ICT specialists	
	1b3 Enterprises providing ICT training	
	1b4 ICT graduates	
2 Connectivity	2a Fixed broadband take-up	2a1 Overall fixed broadband take-up
		2a2 At least 100 Mbps fixed broadband take-up
		2a3 At least 1 Gbps take-up
	2b Fixed broadband coverage	2b1 Fast broadband (NGA) coverage
		2b2 Fixed Very High Capacity Network (VHCN) coverage
	2c Mobile broadband	2c1 5G spectrum
		2c2 5G coverage
		2c3 Mobile broadband take-up
2d Broadband prices	2d1 Broadband price index	
3 Integration of digital technology	3a Digital intensity	3a1 SMEs with at least a basic level of digital intensity
	3b Digital technologies for businesses	3b1 Electronic information sharing
		3b2 Social media
		3b3 Big data
		3b4 Cloud
		3b5 AI
		3b6 ICT for environmental sustainability
		3b7 e-Invoices
	3c e-Commerce	3c1 SMEs selling online
		3c2 e-Commerce turnover
3c3 Selling online cross-border		
4 Digital public services	4a e-Government	4a1 e-Government users
		4a2 Pre-filled forms
		4a3 Digital public services for citizens
		4a4 Digital public services for businesses
		4a5 Open data

Source : European Commission (2022)

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Taking in consideration the quantitative nature of all indicators, the measurement of performance given by this Index is objective and regarding to the reached level of digitalization. It is considered as significant as weighting system among the biggest shortcomings of the Indexes' variety. The relationship between digitalization and sustainable development is objectively judged comparatively to other indices such as (Gross Domestic Products, Global Entrepreneurship Index, Sustainable Society Index and Sustainable Development Goal Index). To mention, it is an index published in 1989 for a maximum of 65 countries in the world based on statistical and survey data.

The actual weight of every dimension (2022) is as following. The four dimensions, instead of five as mentioned in 2017, have become of equal importance therefore equal weights.

Dimension	Weight
1 Human capital	25%
2 Connectivity	25%
4 Integration of digital technology	25%
5 Digital public services	25%

Precisely,

Sub-dimension	Weight
1 Human capital	
1a Internet user skills	50%
1b Advanced skills and development	50%
2 Connectivity	
2a Fixed broadband take-up	25%
2b Fixed broadband coverage	25%
2c Mobile broadband	40%
2d Broadband prices	10%
3 Integration of digital technology	
3a Digital intensity	15%
3b Digital technologies for businesses	70%
3c e-Commerce	15%
4 Digital public services	
4a e-Government	100%

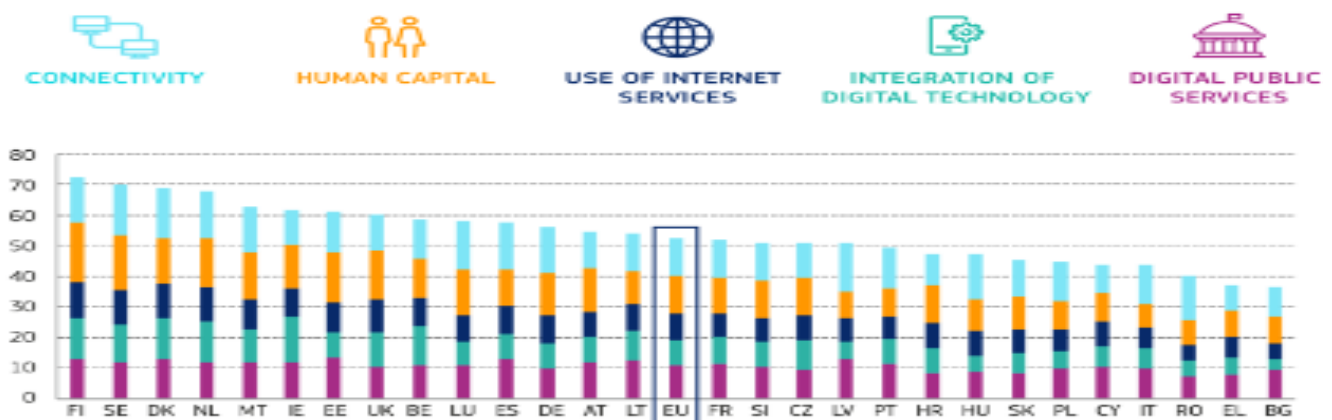


Figure 14 : The DESI and Europe's digital performance and progress

Source : European Commission

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As uniquely used for European countries, its successful application depends on appropriate public policy and public administration based on quality, reliability, accuracy, timing, complete information and the ability to compare their efficiency and effectiveness in other countries by applying international indices and ratings. The country's position comparatively to others demands a comprehensive and an objective view, so experts use numerous indicators for evaluation. The most used and popular are : *IMD World Digital Competitiveness Index (WDCI)*, *Digital Evolution Index (DEI)*, *Digital Economy and Society Index (DESI)*, *ICT Development Index (IDI)*, *Global Innovation Index (GII)*, *Networked Readiness Index (NRI)*, *BCG Economic Digitization Index (e-Intensity)*; *Digital Adoption Index (DAI)*.

This Index is used for Four main types of analysis, according to the European Commission :

- General performance assessment : To obtain characterization of performance of individual Member States by observing their overall index score and the scores of the main dimensions of the index.
- Zooming-in : To precise the areas where Member State could improve the scores of this Index.
- Follow-up : To assess the progress over time.
- Comparative analysis : To compare countries in similar stages of digital development in order to detect the need for improvement in relevant areas .

Possibilities of implementation and Brief features of digitalization in GCC Countries

National cultural dimensions explain the cultural perspective to each country for adopting technological changes and its usage and infusion (Srite, 1999). (Sun, Lee and Law, 2018; Khalil, 2011; Yoon, 2009; Parasuraman, Edvardsson and Gustafsson, 2004) have explored the differences between countries in terms of technology acceptance and readiness (Hofsted, 2011). Starting with *power distance* describing the unequal distribution which has to be lower. Then, *individualism vs. collectivism* describing the strength of community with lower score reflects people's loyalty to the group and their responsibility towards the other. *Masculinity Vs. Femininity* referring to the role of women and man within society with high score of masculinity touch upon money and success as major determinants of success while the opposite appertain to the quality of life. *Uncertainty avoidance* which refers to the level of people's dealing with anxiety and acceptance of risk with a lower score reflects open and relaxed community. For the *Long-term orientation*, it is describing the degree of attachment to past and tradition with high score reflects persistence, pragmatism and thrift, while a lower score refers to nationalism, religion, social changes acceptance. Final point is *Indulgence Vs. Restraint* concerning enjoying life. Low scores imply pessimism, strict social norms and restraint while high scores are about optimism and personal happiness focus.

Since Each of the six countries of the group of Gulf Cooperation Council (GCC Countries) namely Bahrain, Qatar, Kuwait, the United Arab Emirates, Oman, and Saudi Arabia implements initiatives aiming to achieve a digitalized economy. The process of digitalization in the GCC region is described as a simple introduction of technologies but not as a way of transformation. (Almasry et al, 2016) noticed that many organization in the region are gradually increasing technological support but in insufficient infrastructure and a lack of skills in working using digital technologies. In terms of technology, the region prefers Tech solutions instead of using the best practices according to Almasry (2016). Although, the region are implementing broad projects on the digitalization of the economy. Consequently, this will give impetus to the development of their economy. it will arise capitalization, labor productivity and increase the population's quality of life. The government must actively participate and provide financial support in the execution of technologies of all the economy and the business services.

Analyzing digitalization and sustainable development in these countries depends upon the society's strategy. It is based on three main principles namely sustainability, equity and competitiveness. It seems that each country is ensuring sustainable development in the present and in the future regarding to the Qatar National Vision 2030 Plan (Government Communications Office of Qatar 2008). For UAE, The main goal of the Vision 2021 program is to become one of the best countries in the world in six areas— education, healthcare, economy, national security, housing, infrastructure, and public services. Oman and Kuwait are aiming for the restoration of innovative transformation and providing more infrastructure for further development according to (Ministry of Technology and Communications 2008). For Saudi Arabia, the government plan for a thriving economy and ambition nation according to the national program Vision 2030.

Major results of these feature are qualitative or quantitatively undetermined precisely which challenge the indicators used specifically for this purpose and call into question the possibilities of implementation of the said Index. The visionary horizon is way too indispensable for general performance assessment and zooming in but less useful for comparative analysis possibilities. Despite having advanced ranks and developed indicators, the intervention of a powerful Index to measure digitalization and sustainable development in a quantitative precise way is crucial. The internal investment are considered to be the main value for the GCC countries but when they face external obstacles hinder the fuller and wider the use of digital technologies several difficulties emerge. Among others, the insufficient conclusions of macromarketing and its role in accepting digitalization. Thing that only the DESI might precisely insure. Its implementation enable future research to have a representative view of deriving implications especially regarding the cultural characteristics that shape the actions of implementation. Therefore, DESI must have a wider scope of utilization and widespread in nations.

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3. CONCLUSION

By answering five questions for the digitalization and sustainable development, it can be concluded that this relationship is exceeding the limits of necessity but becomes an obligation. Through all this, it seems very evident that digitalization is the new game changer to promote inclusive digitized economy by creating a socio-economic environment through connectivity and communication. Diverse features and pillars are used to transform the growth landscape despite difficulties of infrastructure. It has been noted during the research that the measure of the level of digitalization and sustainable development are not developed enough and that more focus is put on the social and the economic development. The DESI was examined through its components and dimensions through its appropriate structure and weighting system. To conclude that digitalization is a way to compare countries competitiveness but it would be more significant with a common and unique Index.

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