

Education Challenges and Sustainable Development in the Era of COVID 19: Case Study on MENA Region

Dr. May Ibrahim Hassan

Lecturer of Economics and Foreign trade faculty of commerce Helwan university

mayibrahim1@hotmail.com

Abstract:

COVID-19 pandemic has changed many aspects of our lives; The effects of the pandemic on education have been devastating due to learning losses to many students where this raise challenges for remote education, it is very important to study education from different sides as it raises people's productivity, creativity, promotes entrepreneurship and technological advances.

SDGs 2030 shows the importance of education, is that all countries should “*ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*”, this recognized the important role of education as a main driver of development and in achieving the other proposed SDGs’

The Problem of this study is that COVID 19 affected the quality of education and its sustainable development. This will raise a question to what extent did sustainable development was affected by the novelties of education resulted from Corona virus. So; this study will analyze the sustainability in the educational system in the MENA region during the period 2011-2019. The study concluded that the education index has a positive and statistically significant impact on sustainable development (HDI).

Key words:

Education; sustainable Development; COVID 19; Quality of Education

Introduction:

By the end of December 2019, The COVID-19 has started and changed the life all over the world which lead to many countries to ask people to stay-at-home and isolate themselves. The COVID-19 has a strong impact on the educational system all over the world. The pandemic lead to close the schools and universities.¹

COVID-19 has threatened and worsen the Sustainable Development Goals (SDGs) According to OCED report that some countries in the Mena region have affected negatively during the pandemic and this reflects to education and SDGs. So, MENA governments try to offer some tools for the online learning and make easy access to online learning especially in remote and rural areas.²

Some of MENA countries faced some challenges due to pandemic, such as high poverty rate, poor educational qualities such as weak internet, poor infrastructure and weak governance systems. These effects will hinder the economic growth and development.³

Shafiq (2013) stated that there are many negative effects of the education systems due to the Corona virus such as, the reduction in income that makes it harder for the parents to bear the different costs of education and this will lead to withdraw from the school so this will harm the children psychologically.⁴

The problem of the research is that. COVID 19 affected the quality of education, the education operation, the way of teaching and its sustainable development. This will raise a question to what extent did sustainable development was affected by the novelties of education resulted from Corona virus.

The hypothesis of the study is that education has positive impact on sustainable development. So, the main objective of this research is to test the hypothesis while there will be sub objectives such as Analyze the main challenges of education during COVID-19 and to analyze the impact of education on sustainable development

Literature Review:

Education has become an important determinants of nation's productivity. Education in any country represent one of the main determinants of the growth of the output and exports of this country. By good health, food security, and education this will raise the productivity of the workers. Education also can be used as an important ingredient in a system's capacity to borrow foreign technology effectively. According to the the 'new growth theories' that emphasized education as well as learning and R&D. Lucas (1998) stated that the higher the level of education of the work force, the higher the overall productivity of capital because the more educated are more likely to innovate, and thus will affect everyone's productivity.

Education is very important in trade as increase openness and investment in learning and education, this will lead to more export of the country and to be more competitive, finally this will enhance trade performance and competitiveness of the country. Thus Education cannot transform an economy alone but also the domestic, foreign investment and the overall policy of the government are important factors of economic performance.

During the 20th century, the past decades in the Middle East have remarked an expansion in the access of basic education. So, many countries have many schools, and this will improve the quality of education⁵ and offering the education to all students.

Education for Sustainable Development:

Education is an essential and important tool for achieving sustainability all over the world. All population around the world recognize that public awareness, education, and training are the main indicators toward achieving sustainability.⁶ Education for Sustainable Development (ESD) is a dynamic concept that seeks to empower people of all ages to enhance skills and knowledge. The overall aim of ESD is to empower citizens to act for positive environmental and social change, to help people better understand the world in which they live.

ESD brings a new method of learning to people to become empowered to develop their goals of a sustainable development. The United Nations has declared the period from 2005 to 2014 the Decade of Education for Sustainable Development (ESD). The goal is "to integrate the values inherent in sustainable development into all aspects of learning to encourage changes in behavior that allow for a more sustainable and just society for all".⁷

To achieve SDGs, ESD needs systems thinking competence, anticipatory competence, normative competence, strategic competence, interpersonal competence, personal competence, critical thinking and integrated problem-solving competences.

The Sustainable Development (SD) was given attention by the United Nations (UN). In Brundtland commission in 1987, SD was defined as development that “meets the needs of the present without compromising the ability of future generations”. Today, it can be defined and explained as an organized principle of human development that fulfill long term needs of humanity and at the same time sustains the “ability of natural systems to provide natural resources and ecosystem services upon which society and economy depend”.

In 1992 UN held a conference on environment and development in Rio de Janeiro, this conference called for global partnership in SD. In chapter 36 of Agenda 21 they proclaimed that “education has to be reoriented towards SD”. This chapter identified four major points to begin the work of Education for Sustainable Development (ESD): these points are improve basic education, reorient existing education to address SD, develop public understanding and awareness, and training.

In 2002 UN General Assembly decided to initiate the 2005–2014 Decade for ESD led by UNESCO. It focused its efforts on four main areas:

1. Looking at education as a critical implementation tool for SD;
2. Reorienting education systems towards commitments of Millennium Development Goals (MDGs) and Education for All (EFA);
3. Networking and interaction among stakeholders in ESD;
4. Developing approaches for the assessment of progress in ESD.

The Global Action Programme (GAP, 2015–2019) aimed to contribute substantially to the 2030 agenda through two objectives: “Reorienting education and learning so that everyone has the opportunity to acquire the knowledge, skills, values, and attitudes that empower him/her to contribute to a sustainable future. Strengthening education and learning in all agendas, programs, and activities that promote sustainable development.”⁸

The Incheon Declaration (Education 2030) was held in Korea in 2015: Towards Inclusive and Equitable Quality of Education and Lifelong Learning for All. This forum stressed the important role of education as a main driver of development and achieving SDGs and want to reach the quality education concept.

The concept of quality of education is based on the outcome of the educational goals are achieved and purposes fulfilled, with quality seen.⁹

There is no one definition of a quality of education so Quality of education is a dynamic concept that changes over time, and it can be modified according to the social, economic, and environmental factors. To provide ‘quality’ in education so quality assurance is necessary. So, quality can be defined as ‘fitness for purpose’ and quality assurance. Others can be defined as ‘those systems, procedures, processes and actions intended to lead to the achievement, maintenance, monitoring and enhancement of quality’ Therefore, Quality assurance for education systems has become an important issue worldwide.¹⁰

Schultz (1987) tested for this investment-diversion effect. He found that over the period 1969-1980, enrolment rates and number of years of schooling completed rose significantly in low-income countries, so the Costs per pupil decrease, with increase the class sizes per teacher, and decrease in teachers. This will lead to reduce the expenditures per student therefore will lead to reduce the quality of schooling.

Gupta and Cleland (2011) concluded that there is a relationship between population growth and economic development in India that population growth might adversely affect the economic development because if the population 's size increase this will lead to expand production ,needs more schools and health.

Thakran (2015) said that if the basic level of education is low this will hinder the development of the country and plans for a sustainable in the future. So, a higher education level is necessary to create jobs and industries that are “greener with lower environmental degradation. Basic education is a tool to achieve sustainability goals. It can improve productivity, reduce population growth rates, enhance environmental protection, and finally raise the standard of living.¹¹

Hoffmann and Siege (2018) stated that there are two major indicators of sustainability, the first one is the human development index (HDI) and the second one is ecological footprint (EF) so if the HDI is above 0.8 and EF is less than 1.8 so this indicate that the country has high standard of living. So if you enhance and improve the HDI and keep low ecological footprint this will lead to achieve sustainable development.¹²

The study of Fardin and Teymori (2020) concluded that after the COVID-19, online will be kind of education that will be applied all over the world. Therefore, the government must improve the infrastructures required for the online education, in addition to limit the spread of COVID-19 in educational institutions, so the educational costs and environmental pollution would be decreased.¹³

Jin, Qian, Chin and Zhang study in (2020) said that HDI is widely used and well-known indices for assessing sustainable development. It consists of three sub-indicators which are life expectancy, education, and income. According to the Human Development Report of the UNDP in 1990 that HDI has gradually become cited index for sustainability assessment due to its simple composition and rich connotation.¹⁴

According to the United Nations population funds in 2012 they said to encourage and reach sustainable development the government should increase the expenditure on health care, education will be available during child and with a focus on girls, and efforts must be made to improve the quality of life. Also, reduce child mortality, lower fertility, and slow population growth. So greater social equity, together with slower population growth, can also reduce environmental pressures like co2 emissions, pollution which help us to reach sustainability.¹⁵

So, Education is the key that will allow many other Sustainable Development Goals (SDGs) to be achieved. If quality education are achieved in educational systems, the economy will reduce poverty, inequalities and to reach gender equality and also, education empowers people to live healthy.

Challenges of Education in MENA region:

Most of the countries in the MENA region have been affected from the lockdown of the educational institutions due to the pandemic and they started to apply an online learning programs.

So, there are many challenges that effect educational process such as the access of education will be difficult and unequal, the lack of specific resources such as computers and internet connection, the lack of support of family member to help their children to focus on the online

learning, and there is no direct contact with teachers as the interaction with teachers are key factor for successful learning. So, lack of face-to-face interaction will decrease the student learning and motivation.

The first challenge of education during covid 19 is there is difficulty of the access of the online learning during closing ,so most countries inside the region applied online platforms, learning through TV and online applications. So, Children without access have risk of being excluded. Especially people with low-income, poor households and people lived in villages. And the students with disabilities have difficulty in access the online classes.

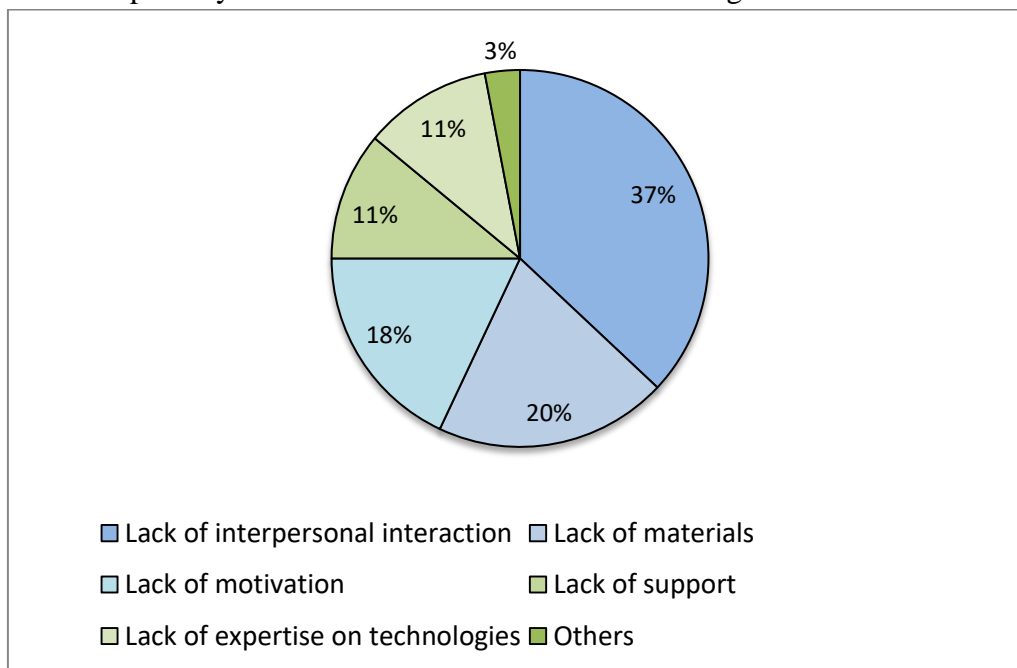
The results of different interviews was made from different studies regarding the primary and secondary schools, it was concluded that the Access of the online learning from the students that enrolled in private schools has been higher than the public schools.¹⁶ The second challenges that there is a Difficult to convert some practical courses into online courses, the third challenges such as Lack of online platforms for teaching and learning . the forth challenges such as some teachers and instructors have limited skills for online teaching, student assessment, also, the Lack of students skills to access and learn online.¹⁷

However, Internalization affected by the lockdown as the number of mobility has decreased as the number of students, lecturers and research going abroad and moving to the region have reduced due to travel restriction.

Adams(2020) argued that COVID-19 may contribute to a short-term decline in greenhouse gas emissions. As he is remarked that China has been reduced pollution and this will increase the sustainable development.¹⁸

Many countries, such as Egypt, has been struggling with a coordinated communication with university administrations, students, teaching, research, and administrative staff.¹⁹

According to previous studies survey it concluded that the main challenges of corona virus that affected the primary education can be summarized in the figure below



Source: edited by researcher from COVID-19: the impact of a global crisis on sustainable development teaching

Despite these challenges of primary education during Covid 19, some countries inside the MENA region have made a great effort and succeeded in the implementation of the Online education in all institutions even inside the schools and universities.

Universities in Morocco have continued online courses only since the beginning of corona. Also, Egypt switched from face-to-face classes to online courses and postponed first-term exams until after the mid-year break as it experiences a second wave of COVID-19 infections. Some countries such as Egypt, Saudi Arabia and Morocco have cancelled or postponed exams and/or replaced in-class exams with online exams or alternative, project-based assignments.

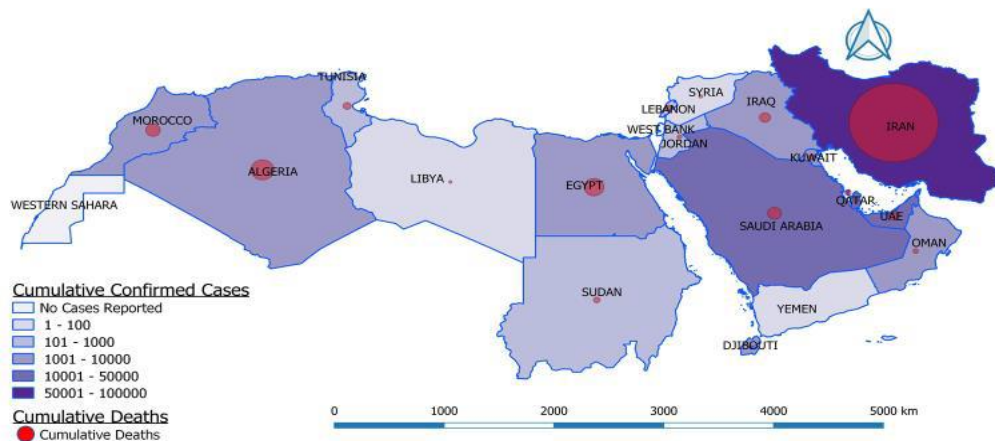
Iraq and the Kurdistan Region have implemented blended learning for the entire 2020-2021 academic year. Many universities have been using a combination of platforms and communication tools, such as Moodle, zoom to enhance the online learning

In 2020, Egypt launched the first digital platform for the online learning in partnership with Microsoft in the educational institutions (schools, universities) which is virtual meeting tools, such as Zoom, Teams or Google Meet.

Tunis offers courses of the online learning to students and professors. Tunis made a strong platform, IT and training capacity that help them to convert their courses online. In Morocco the firms of telecommunications offer the students the access of free internet.

This crisis gave the educational institution an opportunity to build capacity for the online system and strength their system management. Although it can also benefit the students and instructor by enhancing their digital and soft skills through online teaching and learning.

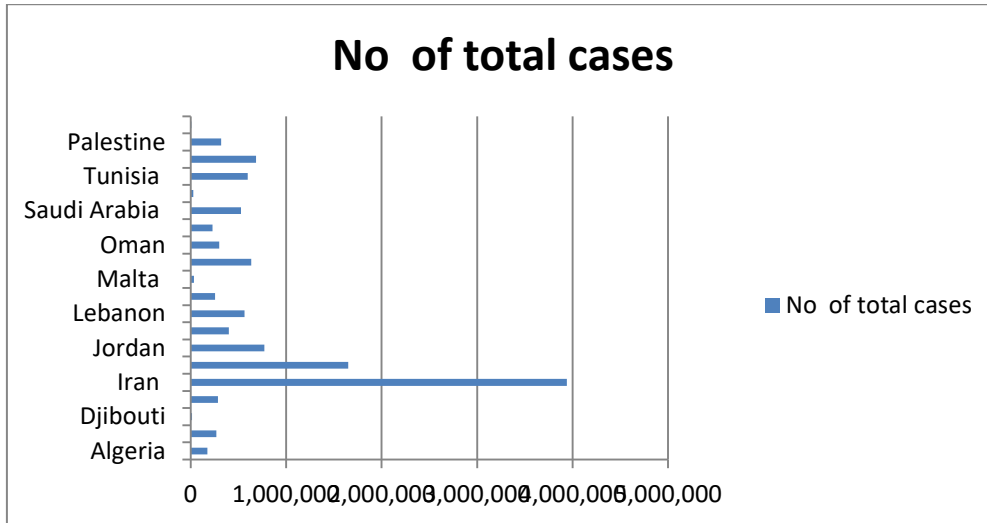
COVID-19 in MENA REGION:



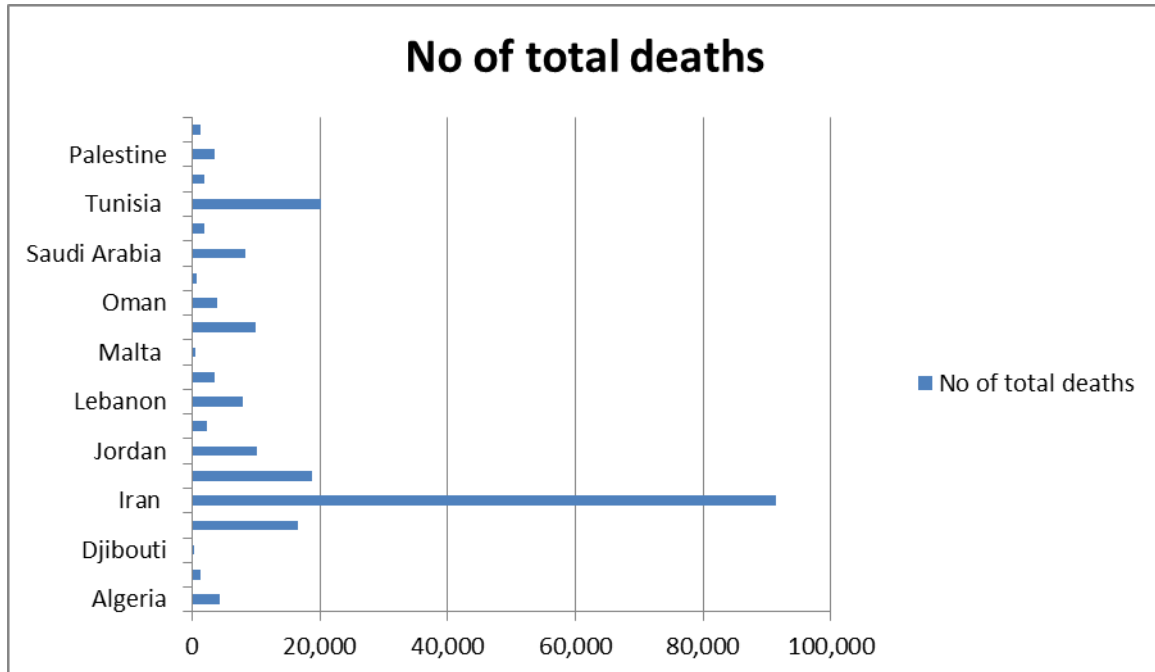
Source: UNCIEF,2020

This map is showing the distribution of the COVID-19 cases among the countries of the MENA region. Most cases occurred in Iran and Saudi Arabi. Yet, the least numbers of cases were reported by Jordan, Libya, Malta, Syria, Palestine, and Yemen.

So, we inspected data reported by the following MENA countries: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, Palestine, and Yemen. Until 2 august 2021.



Source: wordometer,2021



Source: wordometer,2021

At the 2nd of August, it was found from the figure above that IRAN and IRAQ has the highest number of cases while Yemen and Djibouti has the lowest number of cases. However, Iran has the highest number of deaths while Djibouti has the lowest number of deaths.

This refer to the government of Iran said that there are no plans to make quarantine inside the Islamic cities that have the virus, also they have a shortage of masks and hand sanitizer in the shops and poor health infrastructure, hospital beds which lead to spread the virus inside the countries and causing death.

Iran formed the National Committee to Combat Corona that took some actions to limit corona virus from spreading such as increased awareness of people about

COVID-19 by washing their hands with soap and water and using alcohol. Keep a social distance, closing schools, and universities cancelled all the activities inside a country and finally, created teams to diagnose the disease through health centers located in affected cities.²⁰

The government of Djibouti put and implemented a rapid plan to control the virus from spreading in the country; this plan starting by closing the borders, schools, universities, and other places of gathering. Also, the government adopted a strategy depends on four pillar which are testing, isolation, management of building hospitals and finally contact tracing.²¹

Methodology:

The study will depend on the deductive approach and will apply an econometric model to test the impact of education on sustainable development on selected countries in the Mena region such as Algeria, Bahrain, Egypt, Iran, Jordan, Kuwait, Malta, Morocco, Oman, Qatar, Saudi Arabia and Tunis during the period 2011-2019.

In this respect the following formula will be applied

$$\text{HDI} = C(1) + C(2)*\text{EI} + C(3)*\text{co2emission} + C(4)*\text{POP} + C(5)*\text{GDP} + C(6)*\text{HEAEXP} + [\text{CX}=\text{R}]$$

The above variables are explained in the table below as follows:

Variable Description

The Variable Symbol	The Variable
HDI	Human development index
EI	Education index
Co2 emission	CO2_EMISSIONS_KG_PER_2010_US\$_OF_GDP_
pop	population
GDP	GDP CURRENT
Health expenditure	CURRENT_HEALTH_EXPENDITURE%OF GDP

The human development index(HDI) reflect the sustainable development and it means a composite index which measure the average achievement in three basic dimensions of human development, along and healthy life, knowledge and decent living standard. While the education index(EI) is an average mean of years of schooling (adult) and expected years of schooling (children).

The study uses a panel data applied on a sample of selected countries in the MENA region in the period 2011-2019 and consist of 108 observations. Data related to the variables in the model were obtained from the World Bank while the HDI are obtained from united nation of human development data center. Before implementing the model, we should test the stationary of the data by using unit root test

Stationarity Test:

The unit root test is used for testing the stationarity of data, where it can be used to ensure that the panel data of all variables are stationary or not. In this regard, the results of the stationarity test are shown in below table:

Stationarity Test Results at the Level Stage

variables	t- statistics	Probability
Co2 emission2010	-4.34455	0.0000
HDI	-5.44781	0.0000
Education index	-4.1751	0.0000
POPULATION	-6.87194	0.0000
GDP current	-3.31741	0.0005
Health expenditure	-4.10383	0.0000

Source: calculated by researcher using E-views.

After conducting the stationarity test and founding that all the included variables are stationary at the level phase at the 5% significant level. Hausman test is useful and preferable for panel data, and it can be used whether to choose and estimate the fixed or random effects models. Hausman test is a type of Wald Chi-squared (X2) test statistics with k-1 degrees of freedom, where K is the number of regressors.

If the value of the test statistics is larger than the critical (X2), then the null hypothesis that the random effects are uncorrelated with the regressors can be rejected and the more efficient fixed effect model should be selected, and vice versa.

Correlated Random Effects - Hausman Test			
Equation: EQ01			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.866923	5	0.2307

Accor

ding to Hausman test random effect was used and applied.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.502254	0.024558	20.45204	0.0000
EI	0.398432	0.022151	17.98728	0.0000
CO2_EMISSIONS	-0.027841	0.013282	-2.096070	0.0386
POP	7.67E-10	2.41E-10	3.185192	0.0019
GDP_CURRENT	1.07E-14	1.32E-14	0.809769	0.4200
HEAEXP	0.002673	0.000837	3.191176	0.0019

Weighted Statistics			
R-squared	0.845356	Mean dependent var	0.025123
Adjusted R-squared	0.837775	S.D. dependent var	0.012086
S.E. of regression	0.004868	Sum squared resid	0.002417
F-statistic	111.5158	Durbin-Watson stat	1.577319
Prob(F-statistic)	0.000000		

source: These results were obtained by the researcher using EViews software.

The results revealed that 84% of the change in the human development index is explained by the set of the independent variables. The regression analysis indicates that the education index has a positive and statistically significant impact on sustainable development (HDI). Moreover, the co2 emission has a negative and significant impact on sustainable development.

Moreover, the population has a positive impact and significant impact on sustainable development which is inverse to the literature review. Finally, the health expenditure has a positive impact and significant impact on sustainable development.

Conclusion and Recommendation:

Primary Education has faced many challenges during the pandemic such as difficult in the access of online learning, lack of resources, lack of support from adult, there is no direct contact with teachers. Most of the countries in the Mena region started to implement the online learning by establishing the online platforms through TVs, radio, zoom and teams but there will be inequality to the low income and poor people due to their children have not access to these resources and will be excluded from the online learning. Also, it was concluded that students in private schools have Access to online learning easily compared to students enrolled in public schools.

The government should provide teaching practices and policies that ensuring quality of educational outcomes within safe environment. The government should increase spending on education that ensure the basic needs for all students to get. the government should give training to the teachers to enhance their skills about the online learning. and finally, Strength the Education systems for equitable and sustainable development.

Appendix:

Country	No of total cases	No of total deaths
Algeria	173,922	4,329
Bahrain	269,303	1,384
Djibouti	11,653	156
Egypt	284,311	16,528

Iran	3,940,708	91,407
Iraq	1,648,727	18,802
Jordan	772,743	10,059
Kuwait	399,343	2,339
Lebanon	563,124	7,912
Libya	256,328	3,579
Malta	34,439	423
Morocco	633,923	9,885
Oman	297,122	3,868
Qatar	226,540	601
Saudi Arabia	527,877	8,259
Syria	26,005	1,917
Tunisia	595,532	20,067
United Arab Emirates	683,914	1,956
Palestine	316,861	3,604
Yemen	7,081	1,378

Source: wordometer

References:

- “World Bank. 2020. Internationalization of Tertiary Education in the Middle East and North Africa. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/35316> License: CC BY 3.0 IGO.”
- Abdi, Milad. “Coronavirus disease 2019 (COVID-19) outbreak in Iran: Actions and problems.” *Infection control and hospital epidemiology* vol. 41,6 (2020): 754-755. doi:10.1017/ice.2020.86
- Das Gupta, Monica & Bongaarts, John & Cleland, John, 2011. "Population, poverty, and sustainable development : a review of the evidence," Policy Research Working Paper Series 5719, The World Bank.
- Elhakim M, Tourab SB, Zouiten A . “COVID-19 pandemic in Djibouti: Epidemiology and the response strategy followed to contain the virus during the first two month”, 2020. PLoS ONE 15, no.12(2020): e0243698. <https://doi.org/10.1371/journal.pone.0243698>
- Engagement Global (2018)

- F. Fagbemi. "COVID-19 and sustainable development goals (SDGs): An appraisal of the emanating effects in Nigeria". *Research in Globalization*, 3(2021) (<https://www.sciencedirect.com/science/article/pii/S2590051X21000125>)
- Fletcher, Robert and Büscher, Bram and et al . "COVID-19 and the Need for Convivial Conservation" *Journal of Australian Political Economy* 85(2020):200-211
- Husain Salilul Akareem & Syed Shahadat Hossain. "Determinants of education quality: what makes students' perception different?," *Open Review of Educational Research*, 3, no.1(2016):52-67.
- Jin, Hui, Xinyi Qian, Tachia Chin, and Hejie Zhang. "A Global Assessment of Sustainable Development Based on Modification of the Human Development Index via the Entropy Method" *Sustainability* 12, no. 8 (2020): 3251. <https://doi.org/10.3390/su12083251>
- Khataybeh, A., M. Subbarini and Sameera Shurman. "Education for sustainable development, an international perspective." *Procedia - Social and Behavioral Sciences* 5 (2010): 599-603.
- Leal Filho, W., Azul, A.M., Wall, T. et al. COVID-19: the impact of a global crisis on sustainable development research. *Sustain Sci* 16, 85–99 (2021). <https://doi.org/10.1007/s11625-020-00866-y>
- Nikdel Teymori and Fardin M . "COVID-19 and Educational Challenges: A Review of the Benefits of Online Education". *Ann Mil Health Sci Res. Online ahead of Print* 18, (2020) no.3
- OECD (2020), "COVID-19 crisis in the MENA region: impact on gender equality and policy responses", *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, <https://doi.org/10.1787/ee4cd4f4-en>.
- Ozturk. I. "The Role OF Education in Economic Development :A Theoretical Perspective". *Journal of Rural Development and Administration*. XXXIII, no. 1 (2001): 39-47.
- Peter Glavič. "Identifying Key Issues of Education for Sustainable Development," *Sustainability, MDPI, Open Access Journal*. 12, no.16 (2020): 1-18.
- Shafiq. M. "The Effect of an Economic Crisis on Educational Outcomes: An Economic Framework and Review of the Evidence" 12, no. 2 (2013):5-13
- Teymori, Anis and Fardin, Mohammad Ali. "COVID-19 and Educational Challenges: A Review of the Benefits of Online Education," *Ann Mil Health Sci Res.* 18, no.3(2020)
- Thakran. S. "Education For Sustainable Development". *Journal of Educational Quest.* 6, no 1 (2015)
- UNFPA. 2014 "Sustainable Development and Population Dynamics"
- UNICEF, 2020, "Middle East and North Africa Region Covid-19"
- Unicef. 2020 "The impact of COVID-19 on children in the Middle East and North Africa".
- Vasiliki, Kioupiand Nikolaos, Voulvoulis. "Education for Sustainable Development: A Systemic Framework for Connecting the SDGs to Educational Outcomes," *Sustainability, MDPI, Open Access Journal*. 11, no. 21(2019):1-18.

¹Nikdel Teymori and Fardin M . "COVID-19 and Educational Challenges: A Review of the Benefits of Online Education". *Ann Mil Health Sci Res. Online ahead of Print* 18, (2020) no.3

- ² OECD (2020), "COVID-19 crisis in the MENA region: impact on gender equality and policy responses", OECD Policy Responses to Coronavirus (COVID-19), OECD Publishing, Paris, <https://doi.org/10.1787/ee4cd4f4-en>.
- ³ F. Fagbemi. "COVID-19 and sustainable development goals (SDGs): An appraisal of the emanating effects in Nigeria". *Research in Globalization*, 3(2021) (<https://www.sciencedirect.com/science/article/pii/S2590051X21000125>)
- ⁴ Shafiq. M. "The Effect of an Economic Crisis on Educational Outcomes: An Economic Framework and Review of the Evidence" 12, no. 2 (2013):5-13
- ⁵ Ozturk. I. "The Role OF Education in Economic Development :A Theoretical Perspective". *Journal of Rural Development and Administration*. XXXIII, no. 1 (2001): 39-47.
- ⁶ Thakran. S. "Education For Sustainable Development". *Journal of Educational Quest*. 6, no 1 (2015)
- ⁷ Khataybeh, A., M. Subbarini and Sameera Shurman. "Education for sustainable development, an international perspective." *Procedia - Social and Behavioral Sciences* 5 (2010): 599-603.
- ⁸ Peter Glavič. "Identifying Key Issues of Education for Sustainable Development," *Sustainability*, MDPI, Open Access Journal. 12, no.16 (2020): 1-18.
- ⁹ Vasiliki, Kioupiand Nikolaos, Voulvoulis. "Education for Sustainable Development: A Systemic Framework for Connecting the SDGs to Educational Outcomes," *Sustainability*, MDPI, Open Access Journal. 11, no. 21(2019):1-18.
- ¹⁰ Husain Salilul Akareem & Syed Shahadat Hossain. "Determinants of education quality: what makes students' perception different?," *Open Review of Educational Research*, 3, no.1(2016):52-67.
- ¹¹ Thakran. S. "Education For Sustainable Development". *Journal of Educational Quest*. 6, no 1 (2015)
- ¹² Engagement Global (2018),
- ¹³ Nikdel Teymori and Fardin M. "COVID-19 and Educational Challenges: A Review of the Benefits of Online Education". *Ann Mil Health Sci Res*. Online ahead of Print 18, (2020) no.3
- ¹⁴ Jin, Hui, Xinyi Qian, Tachia Chin, and Hejie Zhang. "A Global Assessment of Sustainable Development Based on Modification of the Human Development Index via the Entropy Method" *Sustainability* 12, no. 8 (2020): 3251. <https://doi.org/10.3390/su12083251>
- ¹⁵ Statement by Anne-Birgitte Albrechtsen, UNFPA's Deputy Executive Director of Management, at the Open Working Group on Sustainable Development Goals
- ¹⁶ Unicef, 2020, "The impact of COVID-19 on children in the Middle East and North Africa"
- ¹⁷ Leal Filho, W., Azul, A.M., Wall, T. et al. COVID-19: the impact of a global crisis on sustainable development research. *Sustain Sci* 16, 85–99 (2021). <https://doi.org/10.1007/s11625-020-00866-y>
- ¹⁸ Fletcher, Robert and Büscher, Bram and et al. "COVID-19 and the Need for Convivial Conservation" *Journal of Australian Political Economy* 85(2020):200-211
- ¹⁹ World Bank. 2020. Internationalization of Tertiary Education in the Middle East and North Africa. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/35316> License: CC BY 3.0 IGO."

²⁰Abdi, Milad. "Coronavirus disease 2019 (COVID-19) outbreak in Iran: Actions and problems." *Infection control and hospital epidemiology* vol. 41,6 (2020): 754-755.
doi:10.1017/ice.2020.86

²¹ Elhakim M, Tourab SB, ZouitenA . "COVID-19 pandemic in Djibouti: Epidemiology and the response strategy followed to contain the virus during the first two month", 2020. *PLoS ONE* 15, no.12(2020): e0243698. <https://doi.org/10.1371/journal.pone.0243698>