

DEMOGRAPHIC CHANGE, EDUCATION AND
ECONOMIC GROWTH IN MIDDLE EASTERN COUNTRIES

ABDULLAH ABDULAZIZ ABDULLAH BAWAZIR

FACULTY OF ECONOMICS AND ADMINISTRATION
UNIVERSITY OF MALAYA
KUALA LUMPUR

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ECONOMIC GROWTH IN MIDDLE EASTERN
COUNTRIES**

ABDULLAH ABDULAZIZ ABDULLAH BAWAZIR

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**DEMOGRAPHIC CHANGE, EDUCATION AND ECONOMIC GROWTH IN
MIDDLE EASTERN COUNTRIES**

ABSTRACT

The demographic change-economic growth relationship has been extensively researched for several decades. This has become the dominant paradigm in the field of population and development, and an advocacy tool for highlighting the benefits of age structure change. In the Middle Eastern nations, the proportion of working-age population demonstrated a remarkable change in the population structure over several decades with potential implications on the economy. Additionally, the influence of human capital on economic growth proved crucial as it has been seen as the engine of economic growth. This study aimed to investigate the impact of demographic change and education on economic growth in 10 Middle Eastern countries between 1996 and 2018. For this purpose, the study utilized three alternative models of static panel data comprising of the pooled ordinary least squares, random effects, and fixed effects. This study outlined demographic changes more extensively than most works of literature using the internal demographic compositions of the working-age population with age and gender as measures of demographic change. The results revealed that the demographic changes reflected by the internal demographic composition of the working-age population (young, middle-aged, and senior workers) significantly and positively contributed to economic growth. Moreover, two distinct measures for population ageing were employed, namely, population aged 65 and above and the old-age dependency ratio. Resultantly, the aforementioned age range and dependency ratio positively influenced economic growth. As such, the senior population was not a matter of concern for the Middle East. The mechanisms through which the positive effect can take place are savings behaviour and human capital accumulation of the individuals, in which case, the elderly individuals are

viewed as a source of skilled talents who are able to work for an extended duration of time. This will enable countries to be recipients of the optimal value of older workers who have the tendency to possess extensive experience and knowledge. The educational level-economic growth relationship was also investigated using gender-disaggregated data, thus highlighting that education positively contributed to Middle Eastern economic growth. Specifically, tertiary education contributed more to economic growth compared to other education levels. This is particularly significant as the importance of tertiary education is undeniable in terms of offering knowledge and generating highly skilled workers. In terms of gender, the results showed that both male and female education had a significant impact on economic growth; however, the female education levels contributed more to economic growth than the male education levels. Furthermore, investigation on the role of education and fertility indicated that these determinants were the most vital drivers of female labour force participation. In this vein, the increase in female education and subsequent decrease in fertility rates potentially resulted to increase female labour participation in the region. Hence, more efforts should be made to encourage women's active engagement in the labour market for the achievement of economic benefits. Overall, the Middle East region required demographic and economic policies that promote active engagement in the labour market to enhance productivity and achieve a high-income economy. Educational policies were also needed to prioritise human capital development.

Keywords: Demographic Change, Education Levels, Economic Growth, Middle East

PERUBAHAN DEMOGRAFI, PENDIDIKAN DAN PERTUMBUHAN EKONOMI DI NEGARA TIMUR TENGAH

ABSTRAK

Perhubungan perubahan demografi-pertumbuhan telah dikaji secara ekstensif selama beberapa dekad. Ini telah menjadi paradigma dominan dalam bidang populasi dan pembangunan, dan alat advokasi untuk menonjolkan manfaat perubahan struktur usia. Di negara-negara Timur Tengah, perkadaran populasi usia-bekerja menunjukkan perubahan besar dalam struktur populasi selama beberapa dekad dengan potensi implikasi terhadap ekonomi. Selain itu, pengaruh modal insan terhadap pertumbuhan ekonomi terbukti penting kerana ianya dilihat sebagai pemacu pertumbuhan ekonomi. Kajian ini bertujuan untuk menyelidik impak perubahan demografi dan pendidikan terhadap pertumbuhan ekonomi di 10 negara Timur Tengah di antara tahun 1996 dan 2018. Untuk tujuan ini, kajian ini menggunakan tiga model alternatif data panel statik yang terdiri daripada kuasa dua terkecil biasa terkumpul, kesan rawak, dan kesan tetap. Kajian ini menggariskan perubahan demografi secara lebih luas berbanding kebanyakan literatur yang menggunakan komposisi demografi dalaman populasi usia-bekerja dengan usia dan jantina sebagai ukuran perubahan demografi. Hasil kajian menunjukkan bahawa perubahan demografi yang dicerminkan oleh komposisi demografi dalaman populasi usia-bekerja (muda, umur-pertengahan, dan pekerja berusia) secara signifikan dan positif menyumbang kepada pertumbuhan ekonomi. Lebih-lebih lagi, dua ukuran yang berbeza bagi penuaan populasi digunakan, iaitu, penduduk berusia 65 tahun ke atas dan nisbah pergantungan usia-tua. Hasilnya, julat umur dan nisbah kebergantungan tersebut mempengaruhi pertumbuhan ekonomi secara positif. Oleh yang demikian, populasi tua bukan satu perkara yang perlu dirisaukan bagi Timur Tengah. Mekanisme yang mana melaluinya kesan positif boleh berlaku adalah tingkah laku simpanan dan pengumpulan modal insan bagi individu, dalam kes yang mana, warga tua dianggap sebagai sumber

bakat berkemahiran yang mampu bekerja untuk jangka masa yang panjang. Ini akan membolehkan negara menjadi penerima nilai optimum pekerja berusia yang lazimnya mempunyai pengalaman dan pengetahuan yang luas. Perhubungan tahap Pendidikan-pertumbuhan ekonomi turut juga diselidiki menggunakan data yang dipisahkan mengikut jantina, yang menunjukkan bahawa pendidikan memberikan sumbangan positif kepada pertumbuhan ekonomi Timur Tengah. Secara khusus, pendidikan tertiar menyumbang lebih banyak kepada pertumbuhan ekonomi berbanding tahap pendidikan yang lain. Ini adalah signifikan kerana kepentingan pendidikan tertiar tidak dapat dinafikan dari segi menawarkan pengetahuan dan melahirkan pekerja berkemahiran tinggi. Dari segi jantina, hasil kajian menunjukkan bahawa pendidikan lelaki dan wanita mempunyai kesan yang signifikan terhadap pertumbuhan ekonomi; namun, tahap pendidikan wanita lebih banyak menyumbang kepada pertumbuhan ekonomi berbanding tahap pendidikan lelaki. Selanjutnya, penyiasatan peranan pendidikan dan kesuburan menunjukkan bahawa penentu ini adalah pendorong utama penyertaan tenaga kerja wanita. Dalam keadaan ini, peningkatan pendidikan wanita dan penurunan berterusan kadar kesuburan berpotensi meningkatkan penyertaan pekerja wanita di wilayah ini. Oleh itu, lebih banyak usaha harus dilakukan untuk mendorong penglibatan aktif wanita di pasaran buruh untuk pencapaian faedah ekonomi. Secara keseluruhan, wilayah Timur Tengah memerlukan dasar demografi dan ekonomi yang mendorong penglibatan aktif dalam pasaran buruh untuk meningkatkan produktiviti dan mencapai ekonomi berpendapatan tinggi. Dasar pendidikan juga diperlukan untuk mengutamakan pembangunan modal insan.

Kata kunci: Perubahan Demografi, Tahap Pendidikan, Pertumbuhan Ekonomi, Timur Tengah

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LIST OF SYMBOLS AND ABBREVIATIONS

ADF	:	Augmented Dickey Fuller
ARDL	:	Autoregressive Distributed Lag Model
ASEAN	:	Association of South East Asian Nations
CERT		Centre of Excellence for Applied Research and Training
EU	:	European Union
FDI	:	Foreign Direct Investment
FE	:	Fixed Effects
GCC	:	Gulf Cooperation Council
GDP	:	Gross Domestic Product
GNI	:	Gross National Income
G20		Group of Twenty
HDI	:	Human Development Index
ICT		Information and Communications Technology
ILO	:	International Labour Organization
IMF	:	International Monetary Fund
LLC	:	Levin, Lin and Chu
LM	:	Lagrange Multiplier
MENA	:	Middle East and North Africa
NATO		North Atlantic Treaty Organization
OECD	:	Organization of Economic Cooperation and Development
OLS	:	Ordinary Least Squares
PPP	:	Purchasing Power Parity
PWR	:	Penn World Table
QS		Quacquarelli Symonds

R & D	:	Research and Development
RE	:	Random Effects
SSA	:	Sub-Sahara Africa
TFP	:	Total Factor Productivity
UAE	:	United Arab Emirates
UN	:	United Nations
UNDP	:	United Nations Development Program
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
US	:	United States
USD	:	United States Dollar
VIF	:	Variance Inflation Factor
WDI	:	World Development Indicators
WGI	:	Worldwide Governance Indicators

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CHAPTER 1: INTRODUCTION

1.1 Introduction

Demographic dividend denoted an economic growth element following the changes in demographic compositions, thus leading to an increase in the percentage of the working-age population and a subsequent decrease in the dependent population. A duration of time encompassing a demographic transition is the prerequisite for an economy to undergo a demographic dividend, that constitutes a decrease in fertility and mortality, followed by the succeeding change in a population's age composition. The young dependent population of a nation decreased compared to the working-age counterpart following an annual birth decrease. Thus, with lesser individuals who are dependent on the country, it has the chance for fast economic growth.

Although the demographic dividend prospect closely corresponded to demographic transitions, the criteria distinguishing prospect commencement and termination was ambiguous. Regardless, the prospects began with the proportionate increase of working-age populations apart from low fertility rates and dependent child populations. The prospect would eventually end when the proportion of the working-age population decreased following the perpetual low fertility rates and increasing aged population.

The Middle Eastern region has come to portray a very low dependency ratio. Such a high percentage of the population in Middle Eastern nations were predicted to attain optimal and productive years in the future, thus initiating the demographic dividend prospects. The aforementioned transient age composition augmented economic growth with the existence of appropriate policies for the sustained human capital investment of children and youth. Additionally, the constructive incorporation of the increasing working-age population in the labour market strengthened the positive cycle of improving employment, health, and educational prospects. Consequently, lesser dependency ratios

could enable gender equity development and minimise one of the barriers towards the inclusion of the female workforce.

Overall, Middle Eastern nations are currently experiencing a shift from the age compositions of young to ageing populations to benefit from a demographic dividend for adequate policy establishment. Regardless, the prospect differed across nations following the decline in fertility rates and an increase in life span. In accommodating to the increasing population of adolescents and youths in educational systems, the labour market would demonstrate significant region-specific issues in integrating both cohort groups. Hence, a prioritised need for the cultivation of new employment opportunities and skilled workforce by decision-makers was evident.

The development of age composition has recently highlighted issues on the ageing population and opportunities in the developing world (Ven & Smits, 2011). The United Nations established long-term forecasts that further validated the scenario. Over the next decade, the developed regions would reflect a decrease in the number of working-age individuals and an imminent increase in the working-age proportions in developing regions. Meanwhile, the demographic trend in Middle Eastern nations revealed an increasingly ageing population apart from a new and substantial growth concerning working-age populations. In 2018, the most notable increase in population ageing could be observed in certain countries (Jordan, Egypt, Turkey, and Iran) with the population consisting of individuals from age cohort of 65 years and above ranging between 3.8% and 8.5%. Predictably, population ageing would continue to rise in Middle Eastern nations over the next decade.

Several studies addressed the influence of age structure on economic growth in various economies. For example, Bloom and Williamson (1998), Choudhry and Elhorst (2010), Bloom and Canning (2011), and Cruz and Ahmed (2018) performed an analysis on the

impact of age structure on economic development and revealed that working populations favourably contributed to and crucially impacted economic development. As such, the importance of investing in human capital was highlighted following the correlation between age structure and economic development. Besides, the influence of human capital on economic development proved vital as human capital potentially catalysed economic growth (Lucas, 1988; Mankiw et al., 1992; Nelson & Phelps, 1966).

Following past study findings and the relevant issues on the impact of demographic change on economic growth, the primary study objective aimed to minimise the literature gap regarding demographic changes in the Middle East through the implications of working-age populations and dependency ratios on economic growth. Specifically, this study would provide an evidence-based analysis concerning the contributions of the working-age population and educational level on economic growth and assess the female workforce engagement factors. The study findings would also have notable implications on policymaking and academia in line with past findings.

1.2 Research Background

The Middle East is geographically located between the southwestern region of the Asian continent and Egypt in North Africa. Middle Eastern nations (covering an area of approximately 7 million square kilometres) consist of Bahrain, Cyprus, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Northern Cyprus, Oman, the State of Palestine, Qatar, Saudi Arabia, Syria, Turkey, the United Arab Emirates (UAE), and Yemen (see Figure 1.1).

Despite the inequalities in nation-based income, a considerable degree of regional similarities existed in historical and cultural assimilations. The lingua franca (Arabic) connected the regional population, whereas a common oil resource undoubtedly increased regional incomes and established economic integration. Additionally, Middle Eastern nations shared specific demographic similarities. Changes in the fertility phase also

favourably occurred across Middle Eastern nations and several other countries (Turkey, the UAE, Bahrain, Kuwait, Iran, and Qatar) where the fertility rate attained a replacement rate.



Figure 1.1: Map of Middle East region

1.2.1 Economic Growth Trends

The abundance of oil resources in the Middle East has raised the regional economic growth level. The GDP growth of Middle Eastern nations was extensively associated with the investment in oil and natural gas industries. The dependence on oil escalated in the past decades, but there was a drastic decline in oil price that impacted the Middle Eastern economy (region-based oil-exporting nations) between mid-2014 and 2016. Hence, the GDP growth of regional Middle Eastern nations was predicted to be lower in the future. Figure 1.2 presents the average GDP growth in the Middle East between 2000 and 2018. Meanwhile, Qatar and Jordan reflected the highest average GDP growth rates in the Middle East between 2000 and 2009. Contrarily, the average growth rate between 2000 and 2009 in Oman demonstrated the lowest growth rate. Between 2010 and 2018, the GDP estimates revealed that only Turkey, Saudi Arabia, and Oman did not reflect a downfall. The average GDP growth between 2010 and 2018 indicated that Qatar demonstrated the worst decline in GDP growth within a specific period.

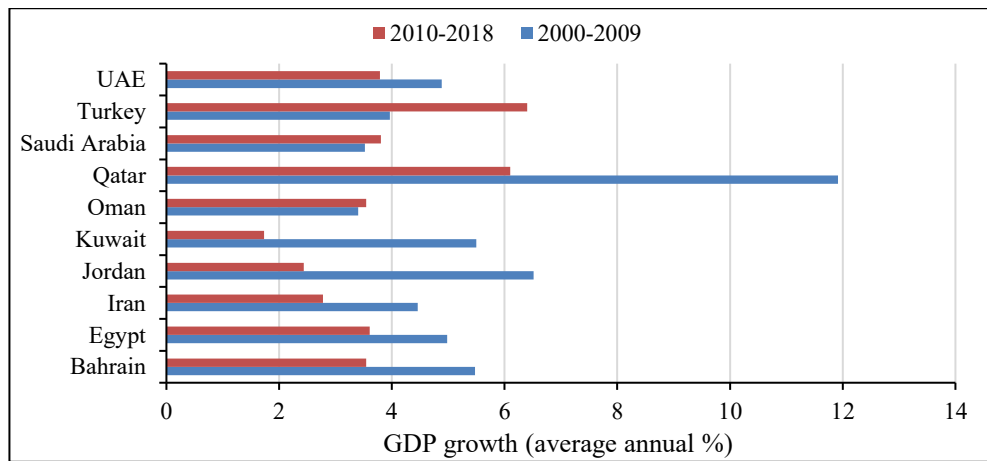


Figure 1.2: Average annual GDP growth rates for the years of 2000 to 2018

Source: World Bank (2020).

Middle Eastern nations have successfully evolved from an agricultural economy to an industrial or service-based economy over the decades. In 2018, the service sector in most nations had the highest contribution to GDP as compared to the other sectors (see Figure 1.3). Moreover, the industry sector surpassed the agricultural and manufacturing sectors in 2018 in terms of its contribution to GDP, making the industry sector the second main contributor of the Middle East countries' economic growth.

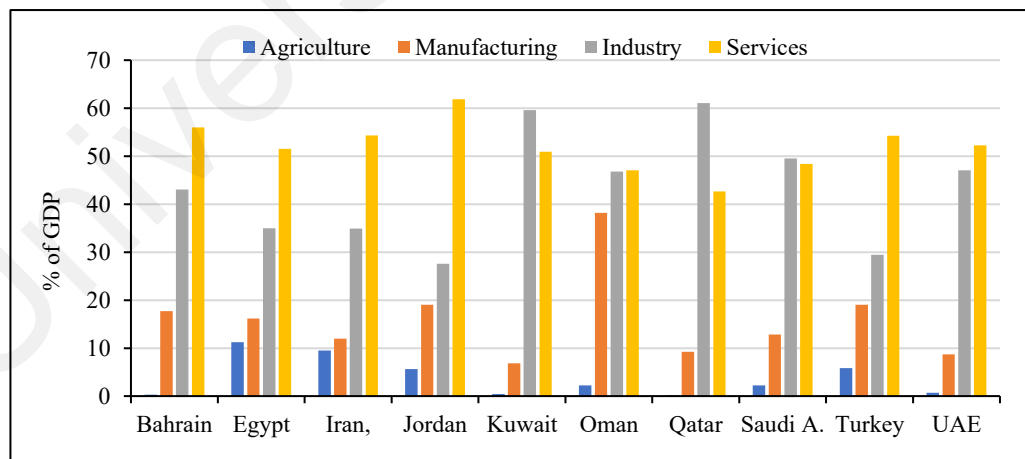


Figure 1.3: Gross domestic product by sector, 2018 (%)

Source: World Bank (2020).

The GDP per capita in the Middle East countries increased during the period 1996-2018 due to a superior growth rate of GDP. Specifically, the GDP per capita in the Middle East reached 20098.74 US dollars in 2017 that was higher than Sub-Saharan Africa (USD

3880.32), South Asia (USD 6563.35), Latin America (USD 16160.22), and East Asia (USD 18095.92) despite being below in Europe and Central Asia (USD 33536.98). Regardless, the average concealed the major variances between nations. For example, the GDP per capita in 2018 was USD 10086 in Jordan, approximately USD 11635 in Egypt, USD 14874 in Iran, and USD 28139 in Turkey. Notably, the Gulf Cooperation Council (GCC) nations (Saudi Arabia, Qatar, Kuwait, Oman, Bahrain, and the UAE) enjoyed high per capita income levels.

Figure 1.4 indicates the significant progress of Qatar, the UAE, and Kuwait regarding the GDP per capita compared to the remaining Middle Eastern nations where the real GDP per capita in 2018 reached USD 96733, USD 68549, and USD 51670, respectively. The GDP per capita was primarily associated with the substantial gas industry in Qatar, rising oil prices in Kuwait, and the vital trade sector role in the UAE between 1996 and 2018.

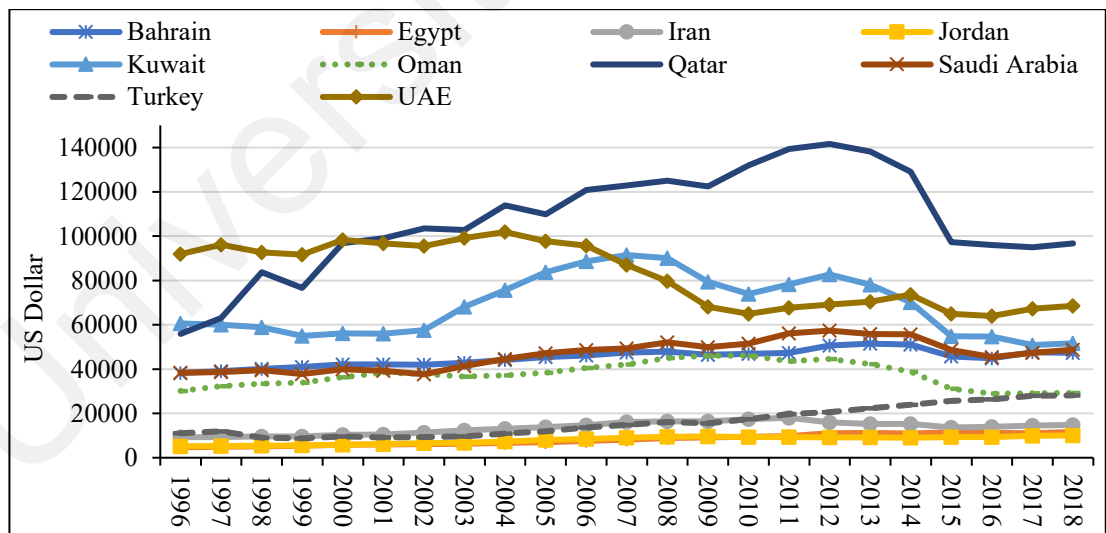


Figure 1.4: Real GDP per capita by country, 1996-2018
 Source: World Bank (2020).

1.2.2 Population Trends

The Middle East population significantly increased from 142 million in 1980 to 329 million in 2018 (see Figure 1.5). Despite the increase, the annual growth rates declined from 5.1% in 1980 to 2.2% in 2018 following the fall in crude birth and death rates.

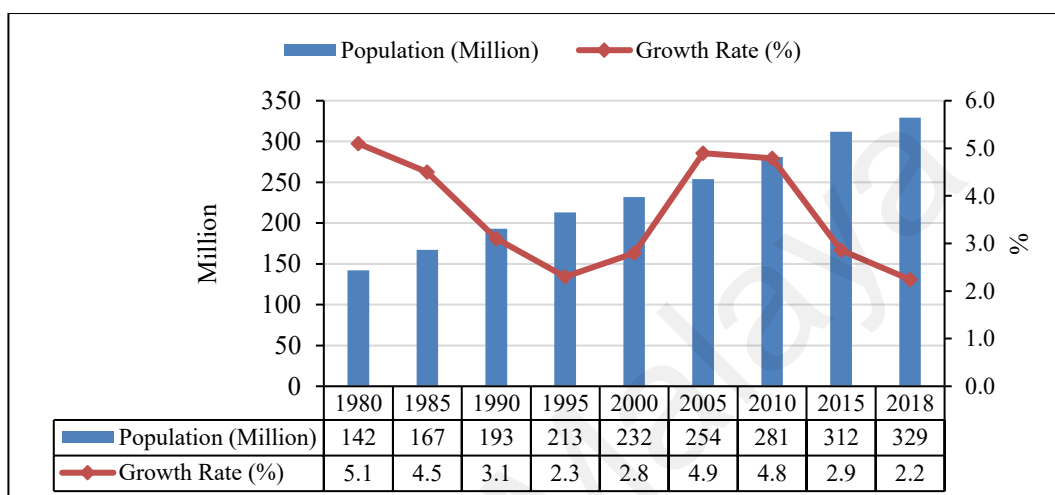


Figure 1.5: Total population and annual growth rates, 1980-2018

Source: World Bank (2020).

Table 1.1: Population and population growth by country, 2018

Country	Total Population (million)	Growth Rates (%)
Bahrain	1.57	4.92
Egypt	98.42	2.03
Iran	81.80	1.39
Jordan	9.96	1.79
Kuwait	4.14	1.98
Oman	4.83	3.45
Qatar	2.78	2.07
Saudi Arabia	33.70	1.80
Turkey	82.32	1.49
UAE	9.63	1.50

Source: World Bank (2020).

Regarding the population growth by country in Table 1.1, Bahrain denoted the highest population growth rate (4.92%) in 2018, followed by Oman (3.45%), and Qatar (2.07%). Meanwhile, Egypt denoted the highest population (98.42 million), followed by Turkey (82.32 million), and Iran (81.80 million).

The increase in the Middle East population could be primarily associated with natural increases (notable declines in death rates). Figure 1.6 primarily presents the demographic rate trends in the Middle East. Specifically, the crude birth rates decreased from 38.79% in 1980 to 16.80% in 2018, whereas the crude death rates decreased from 7.64% in 1980 to 3.36% in 2018.

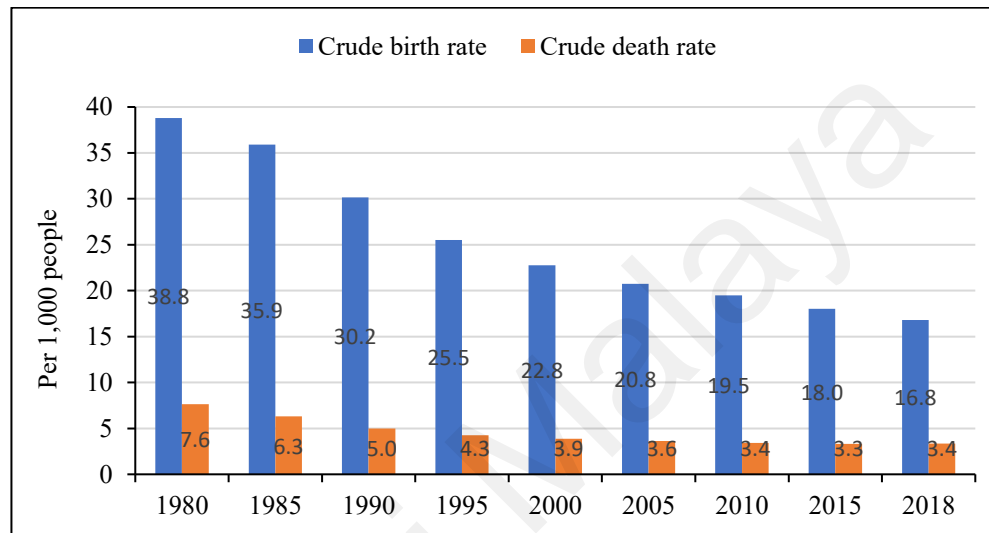


Figure 1.6: Main demographic rates, 1980-2018

Source: World Bank (2020).

1.2.3 Fertility Rate and Life Expectancy

Fertility rates were one of the substantial indicators of ageing populations. Notably, female fertility rates decreased in both developed and developing nations (from five children per woman in 1950 to 2.42 in 2018) (World Bank, 2020). In this vein, low fertility rates and longer life expectancy led to population ageing. The phenomenon was further highlighted by low fertility rates and high senior population. Although this does not affect older individuals in terms of their life expectancy, this adds to their higher proportion. In the case of Middle Eastern countries, increased life quality and rapid economic growth resulted in lower fertility rates and longer life expectancy. Specifically, the fertility rate decreased from 6.08 births 1980 to 2.28 births in 2018 per woman (see

Figure 1.7). Such a downward trend resulted in a higher proportion of the working-age population.

The life expectancy for males at birth increased from 62.19 years in 1980 to 70.97 years in 2000, whereas the life expectancy for females increased from 66.27 years in 1980 to 74.25 years in 2000. Furthermore, the life expectancy at birth increased for both genders in 2018 with 74.90 years for males and 78.09 years for females (see Figure 1.8).

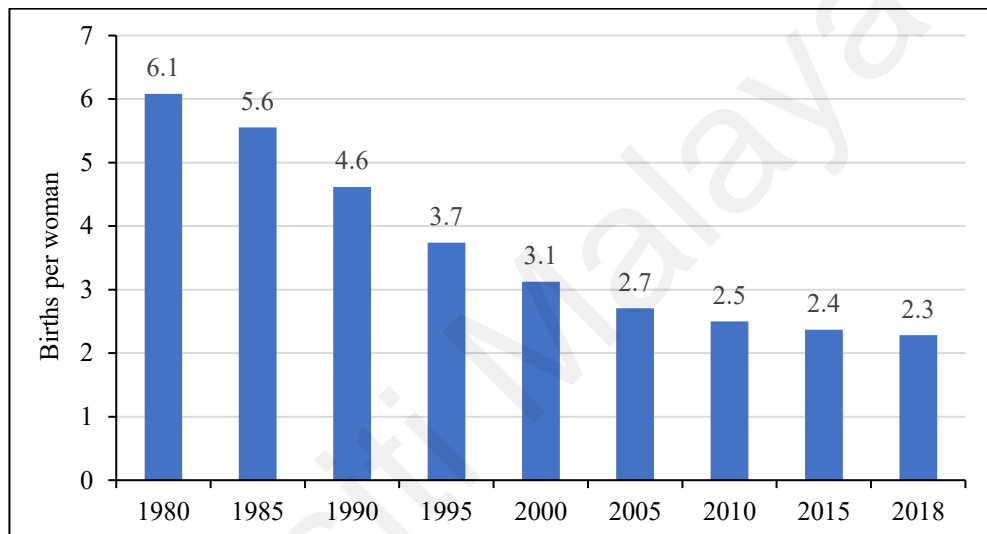


Figure 1.7: Fertility rates of Middle Eastern countries, 1980-2018
Source: World Bank (2020).

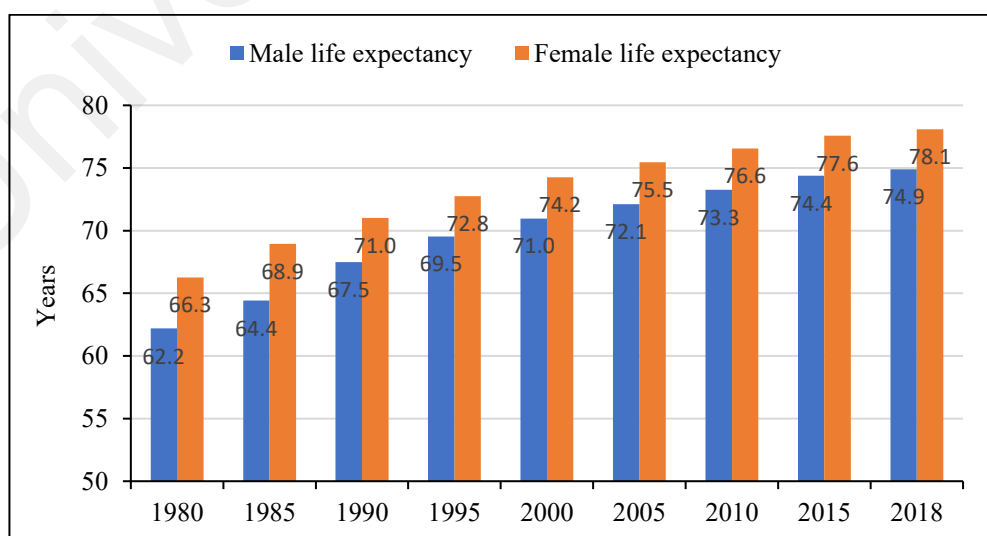


Figure 1.8: Life expectancy by gender in Middle Eastern countries, 1980-2018
Source: World Bank (2020).

1.2.4 Population Age Structure

This section provides data on the age composition of the population of Middle Eastern countries. Specifically, Figure 1.9 reveals that the population percentage below 15 years old decreased from 39.83% in 1980 to 23.34% in 2018. Contrarily, the population percentage between 15 and 64 years old consistently increased from 57.39% in 1980 to 72.97% in 2018. Likewise, seniors aged 65 years old and above demonstrated a considerable rise from four million people in 1980 to 12 million in 2018, thus representing approximately 3.69% of the total population. Notably, the consistent rise was predicted to continue in future.

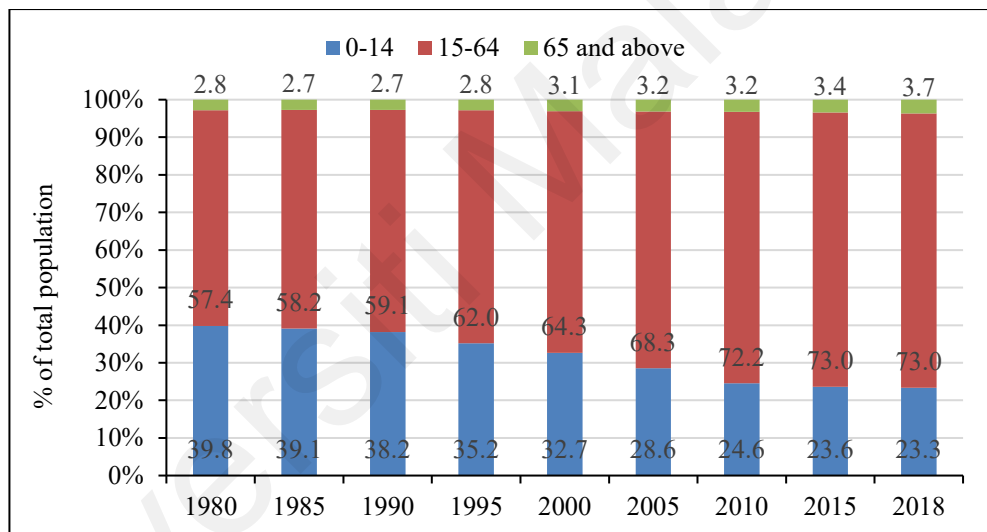


Figure 1.9: Population age structure of Middle Eastern countries, 1980-2018

Source: World Bank (2020).

As for the population age structure by country, similar trends concerning the decreasing population proportion below 15 years old and increasing share of the working-age population (15 to 64 years old) across nations with Qatar and the UAE indicated the highest percentage of the working-age population in 2018 (85.1% and 84.3%, respectively). Notably, Turkey had the highest share of the aged population in 2018 (8.5%), thus indicating a more rapid population transition (see Table 1.2). The similarity

in trends demonstrated the decrease in young age cohorts across regions regardless of the current national economic terrain.

Table 1.2: Country population by age group (% of total population)

Country	1980			2000			2018		
	0-14	15-64	65+	0-14	15-64	65+	0-14	15-64	65+
Bahrain	34.6	63.4	2.1	30.1	67.4	2.5	19.3	78.3	2.4
Egypt	40.8	54.7	4.5	36.9	58.2	4.9	33.8	60.9	5.2
Iran	43.6	53.4	3	34	61.7	4.4	24.5	69.3	6.2
Jordan	49	47.8	3.2	39.6	57.3	3.1	34.2	61.9	3.8
Kuwait	40.3	58.1	1.6	28.4	70	1.6	21.5	75.9	2.6
Oman	45.1	52.2	2.7	37.1	60.5	2.4	22.2	75.4	2.4
Qatar	33.6	64.8	1.6	25.7	72.5	1.7	13.5	85.1	1.4
Saudi Arabia	43.6	53.3	3	38.3	58.7	3	25.0	71.6	3.3
Turkey	39.6	55.6	4.7	30.6	63.3	6.1	24.6	66.9	8.5
UAE	28.1	70.4	1.4	26	72.9	1.1	14.6	84.3	1.1

Source: World Bank (2020).

Regionally, the working-age population between 15 and 64 years old denoted more than 72.96% of the total population. Given that the advantages following age structure changes were impermanent, the ageing population would inevitably hamper economic growth. As a demographic force, the considerable surge of young population in the Middle East provided a historic opportunity. Based on the average educational level and high workforce engagement, workforce quality also catalysed future economic growth.

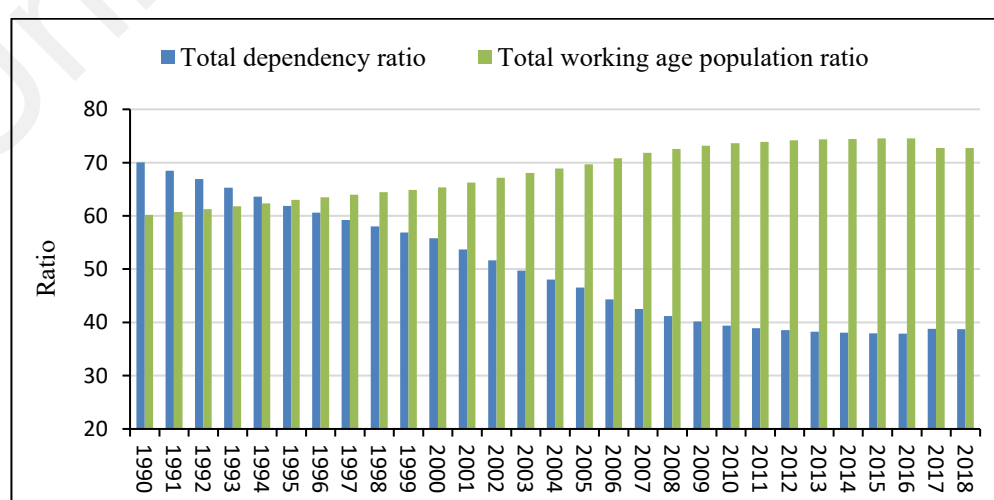


Figure 1.10: Dependency ratio versus working-age population ratio, 1990-2018

Source: World Bank (2020).

As shown in Figure 1.10, the dependency ratio, which is calculated according to the number of dependents aged zero to 14 years and over the age of 65 years divided by the population ages 15–65 years, is almost a mirror image of the share of the working-age population. The share of the working age population and the dependency ratio indicates that a significant change in the population structure has been occurring since the 1990s which could have important economic implications on the Middle East countries. Overall, in the period before 1994, the dependency ratio was higher than the share of the working age population. In 1995 a dramatic shift occurred in the Middle East countries, the dependency ratio began to decline and the working age population started to increase.

Regarding the demographic dividend, the first dividend arises because the demographic transition induces changes in the population age structure that increase the share of the working-age population. Currently, Middle East countries are classified as being in the early demographic dividend stage. Fertility rates have declined, and dependency ratios are low with less than 10% in most Middle East countries. Falling fertility rates will lead to a labour force that is temporarily growing faster than the population dependent on it. All else being equal, per capita income grows more rapidly during this time too. This economic benefit is the first dividend received by a country that has gone through a demographic transition.

It is widely believed that the demographic dividend will provide a window of opportunity for faster economic development; however, this is not a given, and the demographic dividend may or may not be achieved in reality. It is entirely dependent on the successful use of available possibilities and the implementation of appropriate policies. The most important policy recommendations for countries in the early stages of the demographic dividend are focused on investing in human capital, increasing labour

market mobility, lowering barriers to female labour participation, improving the environment for saving, and creating new opportunities for employment opportunities.

1.2.5 Population Ageing Indicators

In developed and developing nations, low fertility rates reflected ageing populations. The replacement rate fertility of 2.1 births per woman is found to be higher than the rate of fertility in the majority of countries (Bloom et al., 2001; Prettnner, 2013). In Middle Eastern countries such as the UAE, Bahrain, Turkey, Iran, Kuwait and Qatar, the replacement rate fertility of 2.1 births per woman is higher than the fertility rate. Consequently, the decline in fertility rates was caused by higher educational access among many women. In this vein, highly-educated women tended to have lesser children (Cuaresma et al., 2009).

As a contributing factor to ageing statistics, increased life expectancy also led to population ageing. Christensen et al. (2009) stated that an increased life expectancy without grave incapacity relied on healthy lifestyles and healthcare innovations. In 2016, the steady increase in the life expectancy of Middle Eastern populations reached 78.09 years for females and 74.90 years for males. The percentage of the population who were 60 years old and above was another ageing population indicator. The old-age dependency ratio that evaluated quantifiable dependents above 65 years old was also a typical population ageing marker. For example, the ratio was measured against the overall population between 15 and 64 years old. The marker also demonstrated an understanding of non-employed individuals compared to the working-age counterpart.

According to Lee and Mason (2010), the decrease in mortality and fertility rates would result in demographic transitions and prospects for economic progress in developing nations. The identified prospects (also known as a demographic dividend) contributed to rapid economic progress upon the establishment of a policy-oriented milieu. Moreover,

the increase of working-age population corresponded to the rise in employment prospects and additional industrial support. Regardless, Bloom et al. (2001) stated that the aforementioned demographic dividend was limited by time following the steady decline in mortality and fertility rates. Consequently, developing nations needed to strategize in resolving potential social and economic barriers (Productivity Commission, 2005).

1.2.6 Gender Gap

The Middle East has suffered from common challenges that have created serious obstacles to its sustainable development. One of the most important obstacles in the development process of Middle East countries is gender inequality and the lack of serious participation of women in the development process of these countries which impedes the exploitation of the capacities of half of their population.

In a study by Mohammed (2021), it was found that while governments in the Middle East region have tried to increase the enrolment and retention of girls in school across countries in the Middle East, however, a corresponding effort has not been made to invest in the quality of education being imparted. While it is encouraging to see that the increasing numbers of girls are being educated, there is a need felt for greater government investment to ensure that those who are educated are also employable. In addition, according to IMF (2018), gender gaps in primary school enrolments were mostly rectified across all regions despite the absence of parity. Progress was also observed in bridging secondary school enrolment gaps. Regardless, the gaps in the Middle East remained from 1990 to 2015.

Table 1.3 shows facts about the evolution of the gender gap in economic activity measured by the ratio of female to male labour force participation rate for Middle East countries and different regions of the world for the period 1990-2018 (World Bank, 2020). In detail, some Middle East countries have achieved a bit high ratio of female to male

labour force participation rate which in turn decreasing the gender gap in economic activity such as Bahrain, Kuwait, Qatar, and the United Arab Emirates, while other countries have witnessed low ratio of female to male labour force participation rate below 50% such as Egypt, Iran, Jordan, Oman, Saudi Arabia, and Turkey.

Table 1.3: Table: Ratio of female to male labour force participation rate (%)

Countries	1990	1995	2000	2005	2010	2015	2018
Middle East Countries:							
Bahrain	33.23	36.11	40.13	45.19	50.07	50.34	51.43
Egypt	29.35	29.03	27.40	27.73	29.91	30.61	25.92
Iran	12.06	13.84	18.87	26.09	22.45	21.21	24.66
Jordan	15.70	17.70	18.40	18.10	22.70	21.90	22.60
Kuwait	47.07	48.46	51.82	50.82	54.75	57.31	57.04
Oman	25.81	26.53	30.24	31.90	32.88	34.32	43.18
Qatar	47.80	47.95	44.69	48.35	53.43	61.91	60.26
Saudi Arabia	18.35	19.27	21.31	23.89	24.52	27.94	28.12
Turkey	42.13	39.70	36.20	33.23	38.81	43.91	46.85
United Arab Emirates	31.20	33.95	36.94	40.26	46.74	53.45	56.09
World Regions:							
East Asia & Pacific	80.70	80.17	79.99	78.55	77.85	77.59	77.53
Latin America & Caribbean	51.55	56.54	59.95	64.32	65.66	66.67	68.29
Middle East & North Africa	23.54	24.66	26.21	28.41	29.24	30.20	29.94
South Asia	35.11	35.44	35.99	37.59	33.38	31.09	30.89
Sub-Saharan Africa	81.44	82.31	83.64	84.58	84.52	84.42	84.64
World	66.83	67.23	67.70	67.66	66.90	66.45	66.60

Source: World Bank (2020).

In respect of international comparison, Table 1 shows the performance of the world regions. Some regions have fallen back in the ratio of female to male labour force participation rate (increasing the gender gap) such as East Asia & Pacific, and South Asia. While other regions have achieved a higher ratio of female to male labour force participation rate (decreasing gender gap) as Latin America & Caribbean, and Sub-Saharan Africa. For the Middle East and North Africa region, the ratio of female to male labour force participation rates are lagging those in different developing regions and shows the lowest ratio at 30% in 2018, which equates to under half of the global ratio.

This ratio reflects a gap of 70% between the female and male activity rates. This figure assures the existence of the problem of the gender gap in economic activity in the region.

1.2.7 Governmental Views and Policies on Population

Given the apparent incongruencies among Middle Eastern nations, various barriers were encountered by the nations, such as increasing populations, high youth unemployment and urbanisation rates, overcrowding in cities, and a huge influx of immigrants. Demographic issues would continue to denote developmental barriers and pose environmental, economic, and political impacts on the region. Employment availability issues also needed due consideration following the millions of applicants in the labour market with the perpetual increase of both working-age population and labour force engagement rates (specifically for women). High unemployment levels would occur despite the presence of foreign migration in several nations. The increasing number of labour immigration in GCC nations occurred simultaneously with high unemployment rates among local workers (specifically university graduates).

In Middle Eastern nations and other countries, the demographic terrain of the last five decades involved rapid population growth that substantially deterred the economy. Nonetheless, the limitation is being substantially resolved following social changes, particularly the moderate development of female empowerment. Middle Eastern nations are now promoting a demographic change that provides dual demographic dividend potentials if governments could develop a conducive atmosphere. The potentials sourced from a huge portion of the working age population, with low responsibility of caregiving for the youth and aged. The following decades reflected increased capital prospects from the savings of middle-aged employees preparing for retirement. Nevertheless, the prospects could become risky with insufficient employment opportunities for the youth labour markets when the savings proved inadequate in the next few decades.

Most Middle Eastern governments in the region observed extensive immigration movements as the most significant demographic issue. The high proportion of the working-age population was a primary concern following the need to develop appropriate job prospects for rapid workforce development. Further challenges faced by governments in the region denoted a high population growth rate. As such, this section outlines governmental perspectives and policies on the Middle East population.

Firstly, the significant policy is related to the population growth and the age structure. Numerous Middle Eastern Governments in the region persist to be worried about by the ramifications of the swift population growth related to economic growth and sustainable development. Policy interventions were also developed following the unfavourable implications of high population growth. Specific Middle Eastern nations (Bahrain, Egypt, Jordan, Oman, and the UAE) implemented policies to reduce the population growth rate by utilising modern family planning techniques, increasing the legal marriage age, and decreasing immigration movements. The policies aimed to overcome the tendency to use renewable and non-renewable resources, minimise climate changes, avert food deficiencies, and provide appropriate employment scopes and vital social services for the population.

Several nations had grave concerns regarding the working-age population size. The provision of appropriate work opportunities for their growing labour forces are the dominant strife faced by countries in the region. In 2018, the youth unemployment rate in the Middle East was at 26.1% (more than twice the global average). According to the International Monetary Fund (IMF), a reformation on the availability of Middle Eastern youth employment to limit the rising unemployment rates was necessary. Based on the population forecasts, a rise in the working-age population (between 15 and 64 years old)

was expected in the Middle East, wherein more employment opportunities (up to 94 million) are required by 2030 (an approximate increment of five million jobs annually).

Regarding the aged population in the region, family members are responsible for the social support and care provided for senior citizens. The situation was acknowledged and reinforced by stakeholders who recognised family units to be the principal providers for aged populations within the conventional social support system. In most Middle Eastern nations, many seniors lived with and relied on family members for familial support and attention. Furthermore, a significant development has been achieved in employing government programs to support the aged in a number of the countries in the region. Pertinent initiatives comprise, mobilizing health insurance provisions covering the disadvantaged aged individuals, intensifying welfare provisions covering incapacity and challenges resultant from ageing process, improving pension funds and social security schemes, in addition to setting day care centres for the elderly.

Further to this, the second offered policy is pertaining to fertility and family planning. The decrease in the fertility levels through direct or indirect means has been implemented by the Governments via a variety of methods. The various methods constitute the incorporation of family planning and safe motherhood programs into the primary health care systems, the provision of access to reproductive health services, increasing the minimum legal age for marriage of men and women, the enhancement of female education and employment prospects, the promotion of the empowerment of women, and the provision of access to affordable, safe and effective contraception. In recent years, fertility decline has come to a standstill in some Middle Eastern countries. In a majority of the countries such as Bahrain, Iran, Kuwait, Qatar, Turkey, and the UAE, the rate of fertility is lower in comparison to the replacement rate of 2.1 births per woman.

The third policy concerned international migration. Governments in the Middle East region have the tendency to execute steps in lowering immigration. In the majority of Middle Eastern countries that have enforced restrictive admission policies, the situation will consist of migrants making up more than 15% of the population, or that of the countries experienced soaring immigrations statistics since the 1990s. Starting from the terminal end of 1990s, the growing number of migrant workers in the workforce have impelled Governments to formulate programs to “nationalize” the workforce, to substitute migrant workers by their own local citizens, and hence offer greater employment prospects to citizens, and decrease their dependency on migrant workers. Customarily, there are two categories of policies in this context: Firstly, policies targeted at reducing the foreign workers, and secondly, policies meant at increasing the workforce demand for citizens.

There are a variety of measures being implemented in every GCC state to promote national involvement, including tariffs, quotas, and salary subsidies, among others. The unemployment compensation or tax established in 2006 in Bahrain, Oman, and Saudi Arabia to guarantee that jobless people are developed and then employed within a certain period of time is an example given by Hertog (2014). Companies benefit from the establishment of "nitaqat" in Saudi Arabia, which separates quotas by forty-one industries and four business sizes, allowing them to operate more efficiently (Hertog, 2014). In order to promote national involvement, Kuwait has implemented "dam al amala," which is a salary support programme for Kuwaiti workers and their families. As a result, wages in the private sector have been brought into line with those in the public sector.

1.3 Research Problem

Although the demographic change-economic growth relationship was extensively studied for several decades, the correlation remained ambiguous with debates on whether

demographic change deterred or catalysed economic growth. While past studies addressed the population size-economic growth relationship, current studies emphasised the effects of changes in the age structure on long-term economic growth.

The age structure dynamics positively affected economic growth and general living standards (Bloom et al., 2001; Choudhry & Elhorst, 2010; Uddin et al., 2016). Notably, the developmental impact of changes in age structure was attained through several paths. The first path indicated an increased proportion of the working-age population, wherein more people were capable of working. In this vein, the working-age population produces more than its consumption, so the per-capita output is increased. The second path involved an increase in savings. As the working-age population produced and saved more, a higher investment and output level was evident. The third and most crucial path denoted the increase in human capital following age structure changes.

The population in the Middle Eastern countries comprising of the children and youths possess the capability of becoming change-makers, mobilizing change for greater prosperity and stability for forthcoming times for themselves and their societies, and have a role in earning the demographic dividend. However, to enable this prospect needs immediate and substantial investment in order to establish potentials for significant learning, public participation and initiatives, which on the whole are at present inadequate, specifically for young women. Throughout the initial half of the 21st century, a huge percentage of the population of the Middle Eastern countries will transient into their most industrious years, unlocking demographic dividend opportunities - economic growth stimulated through demographic transformations. The ultimate positive time for the region is once the dependency ratio is forecasted to be the least. This momentary reduction in the population's dependency ratio possesses the possibility to enhance shared

prosperity and enable the development of possibilities for everyone - but only under specific circumstances

With the high growth of the working-age population proportion in the Middle East, workforce contributions required further research to attain sustainable economic growth. The working-age population between 15 and 64 years old consisted of over two-thirds of the regional population. The demographic momentum would persist over the coming decades and provide historic opportunities to be seized. This unparalleled demographic mass of young people in the prime of their working and creative capacities is a tremendous opportunity for furthering economic and social progress if given the chance. In this regard, the opportunity to get benefits due to a change in age structure is not forever, and the ageing population will ultimately constrain economic growth. For example, an ageing population could denote higher old-age dependency ratios and fiscal expenditures and lower support ratios that ultimately resulted in economic restrictions. Furthermore, an ageing population might impact the national output per capita through labour productivity and employment to the population ratio (Guest, 2005). Workforce engagement tended to decrease with an ageing population and potentially led to slower economic growth (Bloom et al., 2010). Moreover, lower fertility rates in the Middle East would minimise the number of potential workers and influence output production. Hence, it was vital to identify the effects of demographic change as each age group in a population might behave differently and induce different national economic impacts.

The youth unemployment rates in the Middle East were the highest in the world and was more than double the global average (27.2%) (World Economic Forum, 2016). Resultantly, youth unemployment denoted one of the greatest challenges in Middle Eastern economies (O'Sullivan et al., 2011). The rate of female workforce engagement in the Middle Eastern region was also lower compared to other regions worldwide,

including many developing countries with a history of low female engagement rates. Specifically, women represented 48% of the Middle Eastern working-age population and 20% of the labour force, thus widening the gender gap involving the Middle Eastern labour force engagement. Sanghi et al. (2015) stated that gender gaps in labour force engagement were the highest in the Middle Eastern region, wherein male engagement rates surpassed the female counterpart by over 50%. In a report of IMF (2018), more women were penetrating the labour force in all regions excluding the Middle East over the past three decades. It was also revealed that the Middle Eastern region reported the highest income loss following gender gaps in labour markets with an average income loss of 38% in the long run (Cuberes & Teignier, 2016).

Given the demographic change towards ageing, nations needed to refine educational policies to complement labour market prerequisites and facilitate economic growth. Additionally, economic diversification would require multi-skilled employees. Nevertheless, the overall educational scenario in the Middle East remained deplorable. In Holmes (2008), although education was the catalyst of Middle Eastern development and growth, much needed to be done for the production and development of social growth. In a report by the World Bank (2008), officials emphasised that educational reforms needed prioritisation in Middle Eastern nations following the current limitations in economic development to manage high unemployment rates. In IMF (2018), gender gaps in primary school enrolments were mostly rectified across all regions despite the absence of parity. Progress was also observed in bridging secondary school enrolment gaps. Regardless, the gaps in the Middle East remained from 1990 to 2015.

Overall, the Middle East faced deterioration in labour market conditions despite substantial demographic shifts, such as low employment rates, high youth unemployment rates, low female labour force engagement, and high gender gaps in education.

Governments that failed to develop efficient policies regarding the labour market would deter Middle Eastern economies from benefitting from demographic and educational dividends. Hence, the relationships between demographic change, education, and economic growth would interest Middle Eastern nations for sustainable future growth. The importance of education is palpable through the generation of highly skilled workers and the bridging of gender gaps in education to attain significant economic advantages.

1.4 Research Objectives and Questions

The main study objective is to examine the relationship between demographic change, education, and economic growth in the Middle East. The specific study objectives are as follows:

1. To examine the relationship between the composition of the working-age population (by age group and gender) and economic growth in Middle East countries.
2. To investigate the relationship between population ageing and economic growth in Middle East countries.
3. To determine the effect of primary, secondary, and tertiary educational levels on economic growth in Middle East countries.
4. To explore the gender effects of educational levels on economic growth in Middle East countries.
5. To assess the impact of female education and fertility on female labour force participation in Middle East countries.

Correspondingly, five research questions are identified as follows:

1. Is there any relationship exist between working-age population composition (by age group and gender) and economic growth in Middle East countries?
2. Is there any relationship exist between population ageing and economic growth in Middle East countries?
3. To what extent do educational levels affect economic growth in Middle East countries?
4. What are the gender effects of educational levels on economic growth in Middle East countries?
5. What are the impacts of female education and fertility on female labour force participation in Middle East countries?

1.5 Research Significance

Past demographic transformations denoted that age composition would perpetually evolve over some time with implications in Middle Eastern nations. Thus, it was vital for investigations on significant demographic phenomena to be performed. This research aimed to bridge the gap in works of literature concerning demographic changes in Middle Eastern nations by assessing the implications of demographic change for the economic growth of Middle Eastern nations. Specifically, this research would provide evidence-based analysis on the contributions of the working-age population, population ageing, and educational levels on economic growth and the effects of fertility and female education on female labour force engagement. To date, this study represents the first research on the Middle East with disaggregated age groups based on age and gender. The working-age population was classified into six groups: young male, young female, middle-aged male, middle-aged female, senior male, and senior female workers. Following the

classification of the working-age population, the diverse groups portrayed various impacts on economic growth. Additionally, most studies were conducted at the aggregate educational levels without much regard for the relative effects of male and female education. As such, it would be interesting to examine the effects of male and female education on economic growth and the extent to which gender significantly contributed to the growth.

An in-depth understanding of the correlations between working-age population, education levels, and economic growth proved essential in sustaining the Middle Eastern economic growth. Following Bloom et al. (2001), Choudhry and Elhorst (2010), and Uddin et al. (2016), the age structure dynamics positively affected economic growth and general living standards.

The study stakeholders consisted of academicians, professional researchers, policymakers, politicians, and economists in Middle Eastern nations. The research results reinforced the understanding of governments on demographic change, particularly on working-age population transformations and significant growth factors. Specifically, the findings could contribute by providing additional inputs towards policy planning, particularly regarding human capital and workforce engagement.

The overall study outcome might improve the current knowledge and comprehension of demographic changes in Middle Eastern nations. The outcomes could also provide useful insights into the role of education in sustaining economic growth. The current study might prove useful for policymakers in Middle Eastern nations to develop policies that would stimulate active female engagement in the labour market, subsequently facilitating vital economic benefits. Specifically, this research provided several contributions as follows:

i. The study contributes to the empirical analysis on the relationships between demographic changes, population ageing, educational levels, and economic growth using the enhanced Neoclassical growth model for a deeper understanding on the contributions of working-age population and education on economic growth and the impacts of fertility and female education on female labour force engagement.

ii. This research study also improves the comprehension pertaining to the economic growth within an economy with a higher working-age population, and hence, enhances the current pool of knowledge related to literature and empirical work pertaining to the working-age population, the levels of education and the engagement of women in the workforce, not specifically solely in the Middle Eastern countries, but also including other developing countries.

1.6 Research Scope

The study emphasises the impacts of demographic changes and educational levels on economic growth in the Middle East by assessing the implications of the working-age population, population ageing, and educational levels on economic growth and the effects of fertility and female education on female labour force engagement in the Middle East. The study also empirically addressed the research questions in the context of the Middle Eastern economy. The composition of the working-age population and old-age dependency ratio was also employed to measure demographic change, real GDP per capita was used to measure economic growth, and the gross enrolment ratio for educational levels (primary, secondary, and tertiary) was used as education indicators.

This study consisted of the annual panel data for 10 Middle Eastern countries: Saudi Arabia, Qatar, Kuwait, Oman, Bahrain, Turkey, Iran, Egypt, Jordan, and the UAE from 1996 to 2018. Following data shortage for the intended study period involving all Middle Eastern nations, this study was confined to 10 nations. Additionally, these countries were

selected based on economic, social, and political importance in the Middle East. For example, Egypt, Iran, and Turkey represented the largest population in the region. Meanwhile, GCC states (Saudi Arabia, Qatar, Kuwait, Oman, Bahrain, and the UAE) reflected high per capita income levels in the region. On another note, Jordan was the most politically stable nation as opposed to other Middle Eastern countries.

1.7 Thesis Structure

This study consists of eight chapters and is arranged as follows: Chapter 1 serves as the thesis introduction and structure (background, problem statement, and research significance), and outlined the study objectives and questions; Chapter 2 presents the profile of selected middle east countries; Chapter 3 reviewed empirical works of literature on the relationship between demographic change, education, and economic growth; Chapter 4 highlights the conceptual and theoretical framework, methodology and data; Chapter 5 demonstrates empirical results of the impact of the working-age population and population ageing on economic growth; Chapter 6 portrays the empirical results of the varying effects of education levels on economic growth; Chapter 7 further discusses the empirical findings regarding the effects of fertility rates and female education on female labour force participation; Chapter 8 presents the study conclusions, limitations, and potential contributions.

1.8 Definition of Terms

This section presents the study terms, definitions, and limitations of the various concepts utilised in this research.

1.8.1 Demographic Change

More generally, demographic change describes any change in the population's age structure, for example in terms of average age, dependency ratios, life expectancy, family

structures, and birth rates. In this vein, demographics is the study of a population-based on factors such as age, race, and sex.

This study broadly defined demographic change using the proportion of the working-age population (by age and gender) to assess the change in the population's age structure. Two proxies for population ageing were employed: the population aged 65 and above and old-age dependency ratio. Essentially, the study highlighted demographic change by categorising working-age population into three age groups: young workers (15 to 24 years old), middle-aged workers (25 to 44 years old), and senior workers (45 to 64 years old). Then, these age groups were further split by gender (male and female). Consequently, the various age groups had different economic growth impacts (Oliver, 2015; Wongboonsin & Phiromswad, 2017; Zhang et al., 2015).

The current demographic changes in many countries were caused by reduction in fertility rates and by a remarkable increase in people's life span due to better healthcare. Both factors were significantly manifested through changes in the age distribution of populations with relatively fewer young people and more older people than before, thus significantly elevating the old-age dependency ratio. Interestingly, the ratio was estimated to increase over the next three decades in many nations. Consequently, the relative reduction in working-age population might support an increased number of retirees. Thus, the implications of population ageing involved an increase in the old-age dependency ratio, higher fiscal expenditures, and lower support ratio that eventually resulted in slower economic growth.

1.8.2 Education

In the study context, education denoted the educational levels attained by a population (primary, secondary, and tertiary). In Naziev (2017), education signified the organisational and regulatory processes involving the perpetual transmission of crucial

social experiences (derived from previous generations and passed on to the succeeding generations). The primary method to obtain educational elements involved course enrolments related to system training based on educational establishments. Given the crucial insights into and involvement of daily undertakings, education formed the foundation of progress and empowered national capacity. In this vein, education fostered personality development and significantly influenced people's cultural practices, belief systems, and ethics towards other community members in catalysing innovations and addressing the mounting needs of all nations.

1.8.3 Labour Force Participation

According to the World Bank (2020), the labour force participation rate indicated the supply ratio of accessible labour workforce to generate products and services within an economy (the labour force) involving the working-age population in percentage. The total number of employed and unemployed individuals specifically defined the labour force. Additionally, the study data corresponded to the International Labour Organisation estimations.

1.8.4 Economic Growth

Economic growth indicated the assessed increase in economic products and service creation (from one point of time to another) involving nominal or real (adjusted for inflation) factors. Customarily, the aggregate economic growth was gauged using the gross national product (GNP) or GDP. In the study context, the real GDP per capita was employed as a proxy for economic growth. Economically, growth denoted elements of human capital, technology, manpower, and physical capital. Overall, the enhancement in economic output was caused by the expansion in the quantity or quality of working-age populations, employed instruments, and the methods used to integrate labour, capital, and

raw resources for high economic outputs. Following Weil (2013), growth was a sustainable occurrence that evolved on an annual or monthly basis.

Several strategies were identified for economic growth generation. One of the strategies involved the quantitative expansion of physical capital goods within the economy with a tendency for enhanced labour productivity and financial capital. The second strategy involved economic growth production through technological advancement. Further means of economic growth generation served to expand the labour force. Holding other conditions constant, an increase in the workforce would consequently generate an increase in economic goods and services. The final means indicated the results following an increase in human capital, thus signifying that employee developed more skills and expertise with skills training, experimentation, or improved efforts. The most consistent and easiest methods were implemented through savings, investments, and expertise areas.

CHAPTER 2: PROFILE OF SELECTED MIDDLE EAST COUNTRIES

2.1 Introduction

This chapter presented the profiles of each sampled country in this thesis. We went through each country's geography, historical background, demography, economy, and education over time.

2.2 Bahrain Profile

Bahrain is made up of an archipelago of islands situated in the Middle East. The main island is Al-Bahrain with several minor islands and islets. Found in the Arabian Gulf, Bahrain is situated on the northern orientation to Qatar and the eastern orientation to Saudi Arabia. Its maritime country demarcation is with Iran, Qatar, and the Kingdom of Saudi Arabia. Measuring an area of 780 square kilometres in capacity, it stands number three in the line of the smallest nation in Asia, running behind the Maldives and Singapore (Central Informatics Organization, 2020).

In 2002, Bahrain was proclaimed as an Islamic constitutional monarchy. Its capital is Manama, which is its largest city. Historically, it was a protectorate of the United Kingdom at the end of the 1800s, ensuing a succession of treaties with the British. Bahrain proclaimed its independence in 1971. Since 1999 Sheikh Hamad bin Isa Al-Khalifah had helmed the country, and he had converted his title from emir to king at the momentous occasion of Bahrain's proclamation as a kingdom in February 2002. With a population of 1.57 million in 2018, approximately 64% of its population are males, while females constitute the remainder. The young dependency ratio has decreased from 44.6% in 1996 to 24.6% in 2018, whereas the old-age dependency ratio come to 3% in 2018. Bahrain's major language is Arabic; however, English is spoken extensively. It has a high rate of life expectancy, with the men having a lifespan of an average of 76.31 years, and the

women having a lifespan of 78.29 years, according to statistics in 2018 (World Bank, 2020).

Bahrain is one of the pioneering Gulf states to uncover oil and to construct a refinery. Oil was discovered at Jabal Al-Dukhan by the Bahrain Petroleum Company in 1931, and production was initiated the ensuing year. Bahrain has made initiatives in diversifying its economy in the banking, tourism, and services sectors, and indicated a more positive success story in terms of its economic diversification in comparison to other Gulf states. Based on the World Bank (2020), Bahrain's GDP per capita is USD 47,297 in 2018 and it was categorized to be a high-income economy.

The City of London's Global Financial Centres Index dubbed Bahrain as the world's fastest-growing financial centre in 2008, The banking and financial services sector in Bahrain has profited from the resounding success in the region propelled by the need for oil, specifically the Islamic banking. The top leading products exported out of Bahrain are the petroleum production and processing, with aluminium production running in second place, ensued by finance and construction materials.

Economic issues are unemployment, particularly amongst the young people coupled with the decline in both oil and underground water supplies are the substantial long-term economic challenges. Bahrain's workforce came to a total of 0.9 million in 2018. Bahrain's rate of unemployment was 3.9%. Bahrain's unemployment rate experienced substantial fluctuations in the past few years, with a pattern of decline from 2009 up to 2018 phase, terminating at 3.9% in 2018 (World Bank, 2020).

Increasing unemployment among the local people prompted the government's efforts to alter the decades-old "Bahrainisation" policies that had been in place. During the last several years, a significant reform of Bahrain's labour market has been implemented. In

order to eliminate the segmentation of labour between nationals and expatriates, the labour market was completely liberalised. In order to reduce immigration, the cost of hiring both nationals and expatriates was equalised (De Bel-Air, 2015).

Bahrain has established a number of programmes and services to aid in the reduction of unemployment among Bahrainis. Placement and employment services, as well as the National Program on Employment and Training, are examples of what is available. In addition, significant progress has been achieved in the role and position of women in Bahrain, which deserves to be recognised. High rates of education, increasing involvement in the labour market, increased representation of women in social dialogue institutions, and a favourable political and legislative climate are some of the factors that contribute to this.

It is mandatory education for children within the age range of six up to fourteen years old. Citizens in Bahrain enjoy free education in public schools, with the provision of free textbooks as well from the Bahraini Ministry of Education. There are no Co-ed public schools, as boys are kept apart from girls in separate schools. Bahrain promotes the setting up and running of institutions of higher learning, deriving the pool of intake from expatriate talents, and the cumulative pool of incoming homeward bound Bahrainis from abroad, possessing advanced degrees (International Bureau of Education, 2020). In 2018, the rates of enrolment are stated to be 50.48 percent for tertiary education, 98.60 percent for secondary school, and 99.36 percent for primary school (World Bank, 2020). Government expenditure on education has increased over the years arrived to 2.5% as percentage of GDP in 2018. Based on the 2019 United Nations Human Development Report, the education index of Bahrain is at 76.5%, and in 2018 it was positioned with a country ranking of 42 out of 189 countries.

2.3 Egypt Profile

Egypt is a country that spans several continents from the northeast crook of Africa and southwest crook of Asia, with demarcations being the Mediterranean Sea between Libya to the west and the Gaza Strip and the Red Sea situated to Egypt's east. Situated at its southern border in Sudan. Egypt is considered as one of the most influential countries in the Middle East, ensuing its independence and due to its expansive population, cultural reputation, and location situated between two continents which is strategic. Egypt is famous at the global level due to its valuable cultural legacy. Tourists to the count of millions are continuously fascinated to visit it yearly, where they gather in droves to visit Egypt's famous landmarks and the secrets they contained to this day. The head of Cairo's Al-Azhar mosque is considered as among the supreme authorities in Sunni Islam by Muslims globally.

In terms of economic resources, the economy of Egypt relies principally on agriculture, media, petroleum imports, natural gas, tourism, money sent from Egyptians in employment abroad and incomes from the Suez Canal. The Suez Canal, which links the Mediterranean Sea with the Indian Ocean, is the main shipping passageway which offers a vital source of income for the Egyptian government. In 2010, there was a rise in Egypt's GDP per capita from USD 9523 to USD 11643 in 2018. However, as of 2018, the country continued to be a lower middle-income country. In 2018, the Egyptian workforce was valued to the sum of about thirty million workers. An approximated 23.79% of the workforce in Egypt were actively engaged in the agricultural sector, 27.68% were engaged in industry and 48.53% were engaged in the services sector. The unemployment rate was approximated at 11.6% in 2018 (World Bank, 2020). A substantial section of the Egyptian workforce who are employed abroad are engaged chiefly in the Gulf.

In terms of Egypt's tourism industry, it is among one of the extremely significant sectors of the economy in Egypt. In 2008, Egypt received over 12.8 million tourists, affording incomes of approximately USD 11 billion. Approximately 12% of the workforce in Egypt are engaged in the tourism sector (Ragab, 2014). The Giza Necropolis is renowned as one of Egypt's most famous tourist crowd-puller landmark. With a span of more than 3,000 kilometres, the stretches of beaches in Egypt on the Mediterranean and the Red Sea, are equally most sought-after tourist spots; comprising Marsa Alam, the Gulf of Aqaba beaches, Safaga, Luxor, Sharm el-Sheikh, Hurghada, and Dahab, Ras Sidr are popular touristic go-to places.

Pertaining to demographic matters, Egypt is the most inhabited country in terms of population count in the Middle East, amounting to approximately 98 million inhabitants as calculated in 2018 (World Bank, 2020). The population count escalated swiftly from the years ranging from 1970 up to 2010 as the result of advancements in the medical sector and rises in productivity of the agricultural sector empowered and made possible by the Green Revolution. For dependency ratios, the young dependency ratio has decreased over time reached 55.4% in 2018, whereas the old-age dependency ratio has increased slightly come to 8.6% in 2018. The demography of Egypt is divisive along with two major trends, which are the populace inhabiting the key urban centres, and those involved in farming inhabiting the rural areas. The entire inhabited area comprises 77,041 km², making the physical density to be above 1,200 people per km².

Pertaining to the education sector in Egypt, there was a decline in the illiteracy rate in the year 1996 from 39.4% has declined to 25.8% in 2017. The literacy rate for Egyptian adults in the year 2017 was calculated to be 71.2 %. In 2018, the rates of enrolment are stated to be 36.47 percent for tertiary education, 87.91 percent for secondary school, and 106 percent for primary school (World Bank, 2020). Government expenditure on

education during the late 1990s to 2018 reflects an increased public allocation to education reached to 3.6% as percentage of GDP in 2018. As for the ranking of the universities in Egypt, Cairo University, Al-Azhar University, American University in Cairo, Alexandria University, and Ain Shams University, achieved ranking according to their positions in the overall Best Global Universities rankings. In terms of the education index, in 2018 Egypt stands at the ranking of 116 out of 189 countries, with an education index of 60.9% (UNDP, 2018).

Because of the severity of the unemployment problem and concerns about social and political instability, the Egyptian government has begun to be concerned about and devote some attention to the employment challenge. Programs that target poverty alleviation in Egypt are focusing on the provision of credit to stimulate job creation through the establishment of SMEs, as well as efforts to improve labour capabilities through increased education and training, among other measures.

Youth employment has been high on the government's priority list for a long time, with the goal of providing more and better opportunities for young people. The Action Plan highlighted three key areas, which were technical education and vocational training, business growth, and labour market policies and programmes, as well as other initiatives. The priority of technical education is to create the training system for students and to improve the basic and soft skills of graduates from both secondary and tertiary-level education in the areas of language and technology, as well as to improve the basic and soft skills of students in general. Providing start-ups and young entrepreneurs with technical and marketing assistance is the goal of the enterprise development focus area, which aims to encourage entrepreneurship. The development of public employment offices and the strengthening of labour market information units at the Ministry of

Manpower and Immigration are two of the top priorities in the field of labour market policies and programmes (Barsoum et al., 2014).

Egypt has encouraged women to participate in social and economic activities and has made it a point to include this information in national policy and strategy documents. The establishment of the National Council for Women was a significant step forward in the empowerment of Egyptian women and the strengthening of their status in society. Among the objectives of the National Council for Women is to participate in the formulation of policies and programmes related to women's advancement and the sustainability of their development, as well as to define their active roles that support their participation in bringing about a positive transformation in their society on all levels.

In 2015, the Sustainable Development Strategy had three strategic dimensions with some pillars for each dimension: the economic dimension, the social dimension, and the environmental dimension. One of the key performance indicators for economic development until 2030 was to increase female labour force participation from 22.8 percent in 2015 to 25 percent by 2020 and 35 percent by 2030 (Alkitkat, 2018).

2.4 Iran Profile

Situated in the Middle East, Iran is positioned between Turkey and Iraq which are on the west, and Afghanistan and Pakistan which are on the east; its sovereignty demarcations are the Persian Gulf and Gulf of Oman situated in the south, with Armenia, Azerbaijan, the Caspian Sea, and Turkmenistan situated in the north. The total area of Iran is approximately 1.65 million square kilometres.

In 1979, Iran achieved its Islamic republic status through the historical event when the Iranian monarchy was toppled, and the clerics took over the political rule under the supreme leader Ayatollah Khomeini. The Supreme Leader (Khamenei) is the Head of

State who implements dominating control over the state through ideology and politics, and controls the militia, and engages in decision-making on matters such as security, defence, and critical foreign policy matters. The President who is elected through the polls by virtue of majority voting count is the Head of Government and head of the executive branch and can only serve as President not longer than two consecutive terms. The presidential power is constrained and vetoed by decisions of the Supreme Leader, the influential impact of Islamic clerics and conservatives within Iran's intimidating security apparatus that practices coercion, and the judiciary.

Based on the World Bank data, Iran has a population of approximately 82 million; where an estimated one-third is situated in the rural areas and two-thirds are situated in the urban area. From a 2018 estimation, the population of Iran is composed of 24.5% of a cohort with an age range of 0 up to 14 years old, another cohort with an age range of 15 years old up to 64 years old making 69.3%, and the remainder is 6.2% comprising of a cohort with an age range of 65 years old and above. In 2018, the estimated overall life expectancy is 76.5 years, with a life expectancy of 75.4 years for men, and 77.7 years for women. Again in 2018, the estimated fertility rate is approximately 2.14 births per woman, which is a substantial decrease from the estimated rate of 6.48 births estimated in 1980 (World Bank, 2020). The young dependency ratio has decreased from 71.4 % in 1996 to 35.3 % in 2018, whereas the old-age dependency ratio has increased from 7 % in 1996 to 8.9 % in 2018. This is because the old population has grown at a faster rate than the young population.

Iran has implemented a strategy with the goal of slowing the pace of natural population increase in the country. As a consequence of the implementation of the family planning programme, the birth rate has been on a downward trend for the longest period of time. But according to Iran's population dynamics, family planning goals have been met far

sooner than anticipated. For many sections of Iranian society, low fertility (i.e., fertility below replacement level) or fertility that is extremely near to replacement level has been the prevalent feature. As a matter of fact, the results of the family planning programme have surpassed the expectations of those who participated in it. As a result of these demographic shifts, various views about the people have emerged. Therefore, the government is presently expanding the family planning programme while also improving the quality of maternity care in order to achieve these goals (Hosseini, 2012).

Iran's new population strategy seeks to handle the possibilities that arise as a consequence of the demographic window by investing in human capital and making an attempt to generate new and productive employment opportunities. The growing proportion of the working-age population, particularly if they are engaged in the production of goods and services, has a beneficial effect on the Iranian economy. As a result, it is essential to make investments in human capital.

The Iranian government has worked hard to establish legislation that would help women earn a living and get access to employment opportunities. A number of laws have been enacted to promote the economic empowerment of women within the context of the social framework. In light of the fact that women's participation in cultural, social, economic, and administrative professions is essential for the attainment of social justice and the development of a society, particular emphasis should be given to this problem. There has been ratification of the rules and benefits proportional to motherly occupations such as paid maternity leave, reduced working hours, retirement benefits with a shorter length of service, job security, and social security during periods of unemployment, illness or incapacity to work (Janghorban et al., 2014).

In 2018, the workforce in Iran is summed up to 27.8 million. The estimated unemployed statistics stands at 12 %; where the younger workers made up the majority

of the unemployed. Underemployment was also a typical situation. Initiated in 2005, the Fourth Economic Development Plan was established to create 700,000 new jobs annually. However, the unemployment rate plateaued and maintained its stagnancy throughout the ensuing years after the establishment of the plan.

On matters pertaining to education, in 2018, the enrolment in primary schools was 110.71% due to the fact that primary education is obligatory. However, secondary school attendance is not obligatory. Consequently, due to the non-obligatory attendance for education beyond primary school, the enrolment rates are lesser—with approximately 86.31% enrolment for secondary schools and 68.12% for tertiary educational institutions in 2018. Government expenditure on education is about 4% as percentage of GDP in 2018 higher than expenditure on education in 1996. By the year 2004, there are over two hundred public institutions and over thirty private institutions of higher education, with enrolment to the count of approximately 1.6 million students in Iran. The most expansive and prominent public university is the University of Tehran. The biggest private university in Iran is the Islamic Free University. Based on the 2019 United Nations Human Development Report, Iran's education index stands at 75 %, positing the country to the country ranking placed at 70 out of 189 countries in 2018.

2.5 Jordan Profile

Situated in Western Asia in the Middle East, on the East Bank of the Jordan River is the country Jordan. It is flanked by the Kingdom of Saudi Arabia to the south and the east, with Iraq located to the north-east, and Syria located to the north, in addition to Palestine located to the west of its borders. The Dead Sea is situated along its western borders, of which Jordan has a coastline of 26-kilometre on the Red Sea in its furthest south-west side. Located at the intersections of Asia, Africa, and Europe, Jordan is

strategically positioned. Amman is the capital of Jordan, being the most saturated city in terms of population, in addition to being Jordan's centre of economy, politics and culture.

Ever since it gained its independence from the British administration in 1946, Jordan was reigned by King Hussein from 1953 up to 1999. King Hussein had taken ill and passed away due to cancer on 7 February 1999, after reigning Jordan and presiding as its ruler for nearly the extent of its history. Abdullah, his eldest son, who was proclaimed crown prince just two weeks before King Hussein's demise, was sworn in on the exact day of the King's death. The new King Abdullah commenced expeditiously on a mega economic reform and political liberalization program, while concurrently claiming his own style of ruling and the historical role of Jordan's diplomacy in the region. From that time onwards, he has integrated his power and set his domestic priorities, in addition to a forceful economic reform program. In January 2000, Jordan assented to the World Trade Organization, ensued with the signing of free trade agreements with the United States of America, and in 2001 with the European Free Trade Association.

The World Bank has categorized Jordan is as an upper-middle income country. In 2018, there was a rise in the GDP per capita over the years, achieving USD 10093. In the region, the economy of Jordan is one of the lowest economies, and the people of Jordan experience comparatively high unemployment and poverty rates. Its economy is rather satisfactorily diversified. The combination of trade and finance accounted for almost one-third of the GDP; while transportation and communication, public services and facilities, and construction accounted for one-fifth of the GDP, in addition to mining and manufacturing comprising almost another one-fifth of the GDP. Jordan is a prime crowd-puller for tourists, in addition to being a medical tourism spot because of its advanced health sector. Nevertheless, the insufficient natural resources, the huge influx large of refugees and the tumultuous situation in the region have inhibited the economic progress.

In 2016, the amount of foreign debt for Jordan was to the sum of USD 35.1 billion, making up 93% of its GDP. This huge rise is due to the impacts of the volatile condition in the region that resulted in: the decline in the touristic pursuits; decline in foreign investments; a rise in military spending; assaults on the Egyptian pipeline; the trade collapse with Iraq and Syria; and the rise in debts was also due to the expenditures from receiving Syrian refugees and accrued loans interests.

In 2018, Jordan's population was 10 million, with a substantial increase from 7 million documented in 2010. An annual growth rate of about 3.5% was the estimated increase in the population. Based on the 2018 World Bank estimation, the age composition of Jordan comprises approximately 34.3% which is less than 15 years old, with a cohort of age range 15–64 years standing at 61.9%, and 3.8% of the cohort with an age range of 65 years and above. As for the fertility rate, there is an estimation of 2.76 births per woman. In 2018, the average life expectancy of Jordanians is approximately 74.41 years, with life expectancy for males at 72.73 years and life expectancy for females is 76.81 years. The young dependency ratio has decreased over time reached 55.3 % in 2018, whereas the old-age dependency ratio has increased slightly come to 6.2 % in 2018 (World Bank, 2020).

The Jordan Association for Family Planning and Protection (JAFPP) has made significant contributions to this cause, which have shown to be very beneficial. It is the first step in developing a population strategy to implement the National Birth Spacing Program, which aims to improve mother and child health while also reducing fertility by pushing for longer birth intervals. This programme was debated across Jordanian society, and the government ultimately accepted it as an official population strategy, taking into account the religious, social, national, and free-choice aspects of Jordanian society, as well as other factors.

Jordan's National Population Strategy (NPS) was developed by the country's National Population Commission (NPC). Reproductive health, population and sustainable development, gender equality and equity and women's empowerment were the four major focuses of the strategy document. The document also included recommendations for increasing public awareness and activism on these topics (Higher Population Council, 2013).

The Higher Population Council (HPC) aims to raise public awareness of population and development problems, as well as to strengthen advocacy in the following areas: education, health, and the environment. First and foremost, reproductive health and the expansion of the number of people who can benefit from reproductive health services. Next up are reproductive health indicators such as young people's self-empowerment (including unemployment and employment), occupational training possibilities (including public engagement), and educational quality. In the third place, promoting equality and empowerment of women and girls, including economic empowerment, training and capacity-building opportunities for women, the transition of women's employment from the informal to the formal sector, new opportunities to increase women's participation in the labour market, and women's participation in public life are all priorities.

In 2018, the workforce in Jordan was calculated to count of approximately 2.6 million workers in total, based on the World Bank statistics. It was calculated that 71.77% out of the entire workforce were engaged in the services sector, 24.77% were engaged in the industry sector, and 3.47% were engaged in the agriculture sector based on statistics for the year 2018. Furthermore, in 2018, the rate of unemployment was calculated to be 14.96%. A substantial and huge portion of the Jordanian workforce is employed abroad, the majority in the Gulf. Remittances sent home to Jordan by these workers form a

significant source of revenue and are reflected in the balance of payments for Jordan. The women form a small portion of the workforce but are increasing in number—constituting approximately 14.4% percent of the workforce (labour force) in 2018. This figure has increased more than two-fold when compared with the level ten years previously. Over fifty percent of the women being employed are engaged in the education and health industries.

In terms of education, all Jordanians enjoy free primary and secondary education, and it is made obligatory up to the age of 15 years old. In 2016, the rate of enrolment in primary schools is stated to be 97.3%, for secondary school the rate of enrolment was at 82.4%, and at the tertiary level, the rate of enrolment was at 36.3% (World Bank, 2020). Government expenditure on education has increased over the years arrived to 3.6% as percentage of GDP in 2018. Based on the 2019 United Nations Human Development Report, Jordan's education index stands at 66.4%, positing the country to the country ranking placed at 102 out of 189 countries in 2018. Conspicuously, female students constituted nearly fifty percent of the entire university students. Throughout the past few years, the government of Jordan has been raising the expenditure on education. The percentage of knowledgeable and skilled workers in Jordan is acknowledged to be amongst the greatest in number regionally, in the ICT and industrial sectors, resultant from a comparatively contemporary educational system. This has led to substantial foreign investments in Jordan and was an enabler for it to export its workforce to the Gulf countries.

2.6 Kuwait Profile

Situated in the Middle East in Western Asia is a country known as Kuwait. Its sovereignty is marked by the demarcations with Iraq situated to its north and Saudi Arabia situated to its south. In 1938, oil reserves were located in commercial quantities. The

year 1946 marked the inaugural year for the export of crude oil. From the years that range from 1946 to 1982, the country undertook mega and expansive modernization phase. However, in the 1980s, Kuwait underwent a period of geopolitical turmoil and an economic crisis ensuing the crash in the stock market. President Saddam's Iraqi regime invaded Kuwait in 1990, of which it was later annexed. The occupation of Kuwait by Iraq lasted until 1991 ensuing armed involvement by a military coalition helmed by the United States, as Kuwait is a non-NATO ally of the United States. Additionally, Kuwait is a key ally of ASEAN, whilst upholding an extremely solid connection with China.

In terms of political status, Kuwait is a constitutional emirate practicing a semi-democratic political system. Kuwait is helmed by a ruler who is known as an Emir, with successions hereditary ruling legacy, who has the authority to pass laws by decree in instances of the parliament being not in session and have the authority to veto the legislation. The Emir have the power to choose the prime minister, and the selection of the cabinet line-up is dependent upon his consent. Additionally, the Emir has the authority to terminate government ministers and dissolve the parliament. Top cabinet positions, like the prime minister, homeland minister, defence minister, and foreign affairs ministers, are customarily designated to members of the Emir's Al-Sabah family.

According to the World Bank statistics as of the year 2018, Kuwait was populated with 4 million people: out of which 60.5% of the populace were constituted of males, and 39.5% of the populace were constituted of females. Kuwait has a high life expectancy, with the males having a longevity rate of approximately 74.67 years, and the females having longevity of 76.47 years. Even though the rate of birth in Kuwait rate is approximately equivalent to the global average, owing to its low rate of death rate has resulted in a high rate of natural increase. The country is constituted of a high proportion of young people, with approximately 25% of the population are of the age less than 15

years old. The young dependency ratio has decreased from 44% in 1996 to 28% in 2018, whereas the old-age dependency ratio has increased from 2% in 1996 to 3.4% in 2018. This is because the number of elderly people has increased more rapidly than the number of young people.

Kuwait's economy is based on petroleum, where petroleum is the chief export commodity. Presently the Kuwait pipelines pump 2.9 million barrels per day, and its full production the capacity is slightly above 3 million barrels per day. The Kuwaiti dinar is valued as the highest unit of currency in the world. Based on the World Bank, Kuwait is ranked as the seventh richest nation globally per capita. In addition, in 2018, Kuwait is ranked as the second richest Gulf Cooperation Council country per capita, with Qatar ranked as the first, with its Gross Domestic Product per capita valued at USD 51708. Petroleum is credited for 50% of the Gross Domestic Product and 90% of the government revenue. The financial services are counted as among the non-petroleum industries. The world has witnessed a substantial increase in entrepreneurship and small business start-ups in Kuwait in the last half decade.

In 2018, the workforce of Kuwait was calculated to be 2.4 million. Approximately 2.23% of the people employed in Kuwait were actively engaged in the agricultural sector, another 25.37% of the people were engaged in the industrial sector, and 72.4% are engaged in the service sector. In the same year, the overall unemployment rate was assessed to be 2.08%. The unemployment rate for males was estimated to be approximately 0.92% and the female unemployment rate was estimated to be approximately 5.45% out of the workforce. The involvement of Kuwaiti women in politics women has been restricted, even though Kuwaiti women are considered as among the most liberated women in the Middle East. In 2015, Kuwait was positioned at the top most rung amongst the Arab countries in the Global Gender Gap Report. In 2018, the

percentage of Kuwaiti women participation in the workforce was estimated at 51.48%. The country possessed a huge percentage of female citizen participation in the workforce, higher in comparison to other Gulf Cooperation Council countries.

Kuwait possesses the highest rate of literacy in the Arab world. There are four levels to the general education system which comprise of kindergarten (that last for a duration of two years), primary education (that last for a duration of five years), intermediate education (that last for a duration of four years) and secondary education (that last for a duration of three years). Primary and intermediate level education is obligatory for all students within the age range of 6 years old up to 14 years old. Education provided by the state is free for all levels of education, inclusive of higher education. In 2018, the rates of enrolment are stated to be 54.36 percent for tertiary education, 96.97 percent for secondary school, and 100.6 percent for primary school. Government expenditure on education has increased over the years arrived to 4.5% as percentage of GDP in 2018. Kuwait's education index is at 63.8 % and it is ranked at the position of 64 out of 189 countries by the Human Development Report in 2018.

In recent years, there has been a change in recruiting strategies in favour of improving expatriates' level of credentials and professions, while measures aiming to rectify the country's "demographic imbalance" and nationalise the labour force have been implemented. In addition to taking steps to reduce the number of foreign residents in Kuwait, steps were made to reduce the influx of workers into the country. After announcing a strategy in 2012, the Ministry of Social Affairs and Labour said that it would reduce the number of foreigners entering Kuwait by 100,000 per year for the next decade, mostly by limiting the number of low-skilled and service employees who would enter the nation. 31 After going even farther in late 2018, the government declared its aim to lower the total number of foreigners in the country by at least 1.5 million by 2025 in

order to establish a demographic balance between natives and expatriates in the country (De Bel-Air, 2019).

Equal employment possibilities for Kuwaiti women and men are provided by state laws, which include guaranteed public sector positions with equal pay for both men and women. Women and men may benefit from government scholarships to pursue higher education in Kuwait or abroad, and wages in the public sector rise in direct proportion to the degree of education attained. Additionally, the government provides incentives to men and women who want to work in the private sector by supplementing low private sector salaries with subsidies for both employees and employers, as well as by implementing "Kuwaitization" programmes or quotas to hire Kuwaitis in private sector firms (Garrison, 2015).

2.7 Oman Profile

Located on the southeaster coast of the Arabian Peninsula in Western Asia is a country known as Oman. It is situated at a significant position at the mouth of the Persian Gulf which is considered strategic. Oman has its sovereign demarcations with the United Arab Emirates borders situated to its northwest, with Saudi Arabia situated to the west, and Yemen is situated to its southwest and shares its maritime borders with Iran and Pakistan. A sultanate known as Muscat and Oman was the oldest independent state in the Arab world until 1970. It was the regional utmost dominant power during the 19th century, where it has a foothold and firm control of Zanzibar and other territories. From the late 19th century, it possessed strong associations with Britain. The United Kingdom acknowledged the geographical significance of Oman as a hub for trading which protected their trading passageways in the Persian Gulf and the Indian Ocean, in addition to safeguarding their kingdom in the Indian sub-continent. In historical terms, Muscat was the major trading port of the Persian Gulf region. Muscat was also considered to be

amongst the most significant trading ports of the Indian Ocean. Oman is a Sultanate and an Arab monarchy. The Sultan of Oman is the Chief of State and Head of Government. The Supreme Judicial Council nominates judges, who are appointed by the Sultan.

In 2018, Oman's population stands at 4.8 million inhabitants, where males made up 66% of the population and 34% of the population are females. In the same year, the total rate of fertility was approximated at 2.94%. An estimated 76% of the population are categorized as working-age population, who are within the age range of 15 and 64 years. The young dependency ratio has decreased over time reached 29.5% in 2018, whereas the old-age dependency ratio has increased slightly come to 3.2% in 2018. Almost half of the population resides in Muscat and the Batinah coastal plain which is situated northwest of the capital. The majority of the people of Oman are of Arab, Baluchi, and African descent.

In terms of the economy, Oman is deeply reliant on oil and gas resources, which can produce between and 68% and 85% of the government revenue, which is dependent on the fluxes in commodity prices. In 2016, resultant from the dip in the global oil prices had led to a deficit in Oman's budget to the value of USD 13.8 billion, or almost 20% of the GDP. However, in 2017, the deficit in the budget is calculated to have declined to 12% of the GDP due to the reduction in subsidies by the government of Oman. Since January 2018, Oman possessed adequate foreign assets to back its currency's fixed exchange rates. In order to tackle its deficit, the country is issuing debt. To increase production, Oman is employing enhanced oil recovery methods. However, it has also concurrently practiced a development plan which concentrates on diversification, industrialization, and privatization, aimed at decreasing the input from the oil sector to the GDP. The fundamental elements of the diversification strategy of the government are the tourist industry, shipping and logistics, aquaculture, manufacturing, and mining. The World

Bank has accorded Oman a high-income economy ranking, where in 2018, its GDP per capita was valued at USD 29290 (World Bank, 2020).

Based on the World Bank statistics, in 2018, the workforce of Oman was calculated to count of approximately 2.7 million workers. Based on statistics gathered in 2018, it was appraised that 62.69% of the entire workforce were engaged in the services sector, where 32.75% were engaged in the industrial sector, and 4.56% were engaged in the agriculture sector. The rate of unemployment was evaluated to stand at 2.86% in 2018. The women were mostly engaged in the education sector, public administration, defence and social insurance sectors, wholesale, retail and transportation repair undertakings, and social work sectors. Men are impacted to a lesser degree by unemployment in comparison to women with 1.5 % unemployment for men in comparison to 11.8 % for women in 2018. For both genders, involvement and employment have been rising in recent years. However, this pattern has been obvious for the women, whose participation hiked from 23% to 32% between 2000 and 2018.

Oman Vision's industrialisation, privatisation, and Omanization strategies are all centred on Oman. Economic and social objectives of the country are outlined in the document, which include maintaining economic and financial stability, reshaping the role of government in the economy, broadening private sector participation, diversifying sources of national income, globalising the Omani economy, and upskilling the Omani workforce. Specifically, the Oman Decent Work Country Programme focuses on three areas of importance. First and foremost, improving the labour market via the development of skills, entrepreneurship, and a well-coordinated National Employment Policy are essential. Secondly, improving and extending social protection is essential. In a third step, strengthening labour governance in line with international labour norms is being considered.

The Omanization programme has attempted to reduce the country's reliance on expatriate employees by establishing quotas and aggressively replacing expats with local labour. Quotas vary from industry to sector and include a broad range of values. A "green card" is awarded to businesses that achieve their government-mandated objectives and are therefore given preferential treatment in their interactions with the government.

Government initiatives based on the ideals of modernization, especially education, women's empowerment, and political involvement, have contributed to a narrowing of the gender wage disparity. Women's involvement in the labour field is encouraged by government policies, which include provisions in labour law and regulations that provide significant benefits to spouses who want to work. According to the most recent government regulations in Oman, women now have equal chances for public employment as well as positions of authority, and they are not subject to any duties or obligations to their male counterparts (S. Mansour et al., 2020).

In terms of education, the adult literacy rate was estimated at 95.65% in 2018. There were only three formal schools that were available for the whole of Oman, with less than 1,000 pupils prior to the year 1970. From the time of the late Sultan Qaboos' rise to power in 1970, high importance was placed on education by the government to enhance the domestic workforce, which the government deems a crucial factor in the development and growth of the economy and social aspects of the country. The number of state schools are above 1,000 and numbering approximately 650,000 students. Starting from 2018 Oman attained a high score on the gross school enrolment ratios, with the enrolment for primary schools at 109%, secondary schools at 107%, and tertiary education at 45%. Government expenditure on education during the late 1990s to 2018 reflects an increased public allocation to education reached to 5% as percentage of GDP in 2018. In 2018, as

for the education index, the education index for Oman was at 71.8% and it was ranked at position number 60 out of 189 countries.

2.8 Qatar Profile

Situated in the Middle East, the State of Qatar occupies the small Qatar Peninsula which is situated on the north-eastern coast of the Arabian Peninsula. Its sovereign border is demarcated by neighbouring the Kingdom of Saudi Arabia situated to its south, which is also a Gulf Cooperation Council (GCC). The Persian Gulf encloses its other borders. Qatar has been governed under the reign of the House of Thani from the date Mohammed bin Thani signed a treaty with the British in 1868 which acknowledged it as a separate entity. Ensuing the Ottoman rule, Qatar was a British protectorate in the initial years of the Twentieth century until it gained its independence in 1971. With nearly 98% in favour, the constitution was approved by the vast majority in a referendum in the year 2003.

In terms of the demography, there has been a continual expansion in the population of Qatar. In spite of an evidently low rate of death, nevertheless, Qatar's comparatively low birth rate has resulted in a rate of natural increase which is somewhat lower than the world average. The World Bank evaluated that the population of Qatar to be 2.8 million, with 75.5% of the population were males and 24.5% of the population were females in 2018. The population of Qatar comprises to a large extent those of the working age, with over 85% of the population showing a high indication of age cohort ranging between 15 years old up to 64 years old. The average life expectancy for males is approximately 79 years and for females is 82 years. The young dependency ratio has decreased over time reached 16% in 2018, whereas the old-age dependency ratio come to 2% in 2018.

The prosperity in the economy of Qatar is obtained from the mining and export of petroleum which was detected in 1939 and its initial production was in 1949, and also due to natural gas. Prior to the Second World War, the people of Qatar were involved in

the pearling industry, fishery, and certain trade. There were scarce occupations for the offering and Qatar was among the poorest countries in the world. Nevertheless, by the 1970s, the citizens of Qatari who were natives to the land relished one of the highest per capita incomes at the global level, in spite of episodes of depreciation in income caused by the instabilities in world oil prices. Qatar's GDP per capita was valued to be above USD 96805. It maintained its title of being one of the most affluent countries in the world in 2018 (World Bank, 2020).

In terms of its workforce, it was calculated to be 2.1 million in 2018. The workforce depends exhaustively on the foreign workforce to expand its economy, to the degree that the migrant workers constitute 86% of the population and involvement of 94% in the workforce. It is estimated that in Qatar, 1.22% of the workforce were actively engaged in the agricultural sector, with 54.47% of the workforce were engaged in the industrial sector, and 44.31% of the workforce were engaged in the service sector. In terms of the women's participation in the workforce in Qatar, 58.13 % of Qatari women were involved in 2018 (World Bank, 2020). There has been an increase in the participation of the local women in the workforce in Qatar, with certain employers perceiving them to be more tenacious and more reliable in comparison to the average local male worker. The women were more economical too to be taken in for employment in terms of salary. Women climbing the occupation ladder to powerful and influential positions have a propensity to arise from the middle- and upper-class families. Undeniably, a woman who rises to a designation that is influential at work requires backing from her family, particularly from the male members.

It is the goal of the Qatari government to achieve a balance between population growth and the requirements of sustainable development in order to provide a decent life for the population, improve their abilities, broaden their options, and increase their participation

in the advancement and eminence of the society. Qatar's new population strategy seeks to reduce the country's demographic imbalance by promoting the development of the Qatari population while simultaneously limiting the recruitment of foreign employees. According to the Permanent Population Committee's report, it is necessary to modify the population strategy in order to ensure that it is compatible with the Sustainable Development Goals 2030. As a result, the committee recommended that the following new axes be developed: reduce early retirement and rehabilitation of Qataris to work in various fields; diversify and coordinate between institutional initiatives that support youth participation in developmental, social, and cultural fields; ensure equal opportunities for young males and females; and expand the fields of women's participation, particularly in the labour force and other fields.

Free education is made available for the entire citizen of Qatar within the ages range of 6 to 16 years of age; however, it is not obligatory. Classes are not co-ed and students are separated according to gender. Qatar emplaces a heavy budget educational expenditure; it has one of the exorbitantly high per-pupil expenditures globally. The rate of enrolment is stated to be 104% at the primary school level, 93% at the secondary school level, and the enrolment rate for tertiary education is at 15 % in 2018. Adult education classes are also made available by the government in schools and centres all over Qatar, with prominence given to enhancing adult literacy. Pertaining to literacy, approximately four-fifths of the population in the country is literate, with almost equal percentages of males and females who are literates. Government expenditure on education has increased over the years arrived to 3.1% as percentage of GDP in 2018. Based on the 2019 United Nations Human Development Report, the education index of Qatar stands at 65.3%, where the country is positioned at the country ranking of 45 out of 189 countries in 2018.

2.9 Saudi Arabia Profile

The Kingdom of Saudi Arabia is situated in the Middle East, filling almost 80% of the Arabian Peninsula in terms of its size. Its sovereign borders are demarcated by Jordan and Iraq which are situated to its north, Kuwait which is situated to its northeast, with Qatar, Bahrain, and the United Arab Emirates which are situated to its east, alongside Oman which is situated to its southeast and with Yemen which is situated to its south; It is known to be the only country having both the Red Sea and the Persian Gulf as its coasts. The Kingdom of Saudi Arabia was established on 23 September 1932 by Abd al Aziz Al Saud. The 'Unification' had merged and unified the rival tribes into a modern state, encompassing an area that is approximately the size of the current boundaries. The Kingdom of Saudi Arabia is an absolute monarchy. Partisan or political parties or national elections are non-existent. The political system is dominated by the royal family, with the King being the Chief of State and head of government.

The population of the country was estimated to be 33.7 million, where males constituted 58% of the population and females constituted 42% of the population in 2018. A large majority of the population is young. Based on the 2018 World Bank estimation, Saudis within the age range of 0-14 years constituted 25% of the population, and Saudis within the age range of 15–64 years constituted 72% of the population. There is only 3.3% of Saudis who are 65 years old and above. The life expectancy of the Kingdom of Saudi Arabia is fairly high: with the males having a life expectancy of 73.80 years, the females having a life expectancy of 76.62 years, and the total life expectancy of 74.99 years. Its fertility rate is 2.32 births per woman, showing a substantial decline in the last two decades from 6.4 births per woman in 1985. The young dependency ratio has decreased from 73% in 1996 to 35% in 2018, whereas, the old-age dependency ratio has increased to 5% in 2018. (World Bank, 2020).

The Kingdom of Saudi Arabia is the leading economy in the Middle East and the eighteenth biggest economy in the world since October 2018. The world's second-largest established petroleum reserves are found in the country, and it is the leading exporter of petroleum. Furthermore, the fifth-largest established natural gas reserves are also located there. Saudi Arabia is coined as an "energy superpower". Additionally, the third highest total estimated value of USD 34.4 trillion in natural resources are also found in the Kingdom of Saudi Arabia in 2016. Its prime economic resource is based on petroleum, where the oil industry generates approximately 63% of budget revenues and 67% of export earnings. The World Bank categorized the Kingdom of Saudi Arabia as a high-income country. In 2018, its GDP per capita was USD 48756.

The Saudi economy faces challenges that involve stopping or overturning the depreciation in per-capita income, enhancing education to train the youth for the workforce, and offering them jobs, expanding the economy through diverse initiatives, invigorating the private sector and housing construction sector, and reducing corruption and disparity. For the Kingdom, the workforce is a substantial issue. The rate of unemployment remained stagnant and maintained its 6% rate in 2018. The economy is wholly dependent largely on the skills and expertise of expatriates living in the country. In 2018, the workforce of the country is estimated at 14.39 million, with expatriate workers forming almost a third of that total. As a retaliation, the government of the Kingdom of Saudi Arabia has introduced a policy known as 'Saudization', substituting expatriate workers with Saudi nationals. Non-compliant firms with the Saudization regulations were cautioned that they will fail in attaining government contracts.

Free education is provided at all levels. In 2018, the percentage of the enrolment ratios is stated to be 116.2% for primary school, for secondary school it is 108.3%, and for tertiary education, the enrolment rate is 66.6% (World Bank, 2020). Government

expenditure on education during the late 1990s to 2018 reflects an increased public allocation to education reached to 5.8% as percentage of GDP in 2018. There was a rapid expansion in the higher education sector, with the establishment of great numbers of universities and colleges, predominantly since 2000. The numerous Institutions of Higher Education that were established consist of the country's pioneering university, the King Saud University which was established in 1957, the Islamic University at Medina which was established in 1961, and the King Abdulaziz University in Jeddah which was established in 1967. A recently established university which was founded in 2009 was the King Abdullah University of Science and Technology, also referred to as KAUST. Additional colleges and universities focus on curricula in the sciences and technology, military studies, religious studies, and medicine. There were myriads of institutes that were dedicated to Islamic studies. The women were generally separated to receive college instruction in separated institutions. The Academic Ranking of World Universities 2018 had evaluated the ranking of two Saudi universities, which were the King Abdulaziz University and King Saud University and has placed them among the leading 150 universities in the World. In the same year, the Kingdom of Saudi Arabia was placed at ranking number 28 at the global level based on its first-class research output, which was accorded by the Scientific Journal Nature. As for the education index, in 2018, it achieved 78.9% and was a position with the country ranking 40 out of 189 countries based on the Human Development Report.

Recently, the Saudi government introduced numerous radical changes in labour policies under two banners: first, Saudi nationalization, which means larger domestic labour market restructuring, and where the government requires employers to fill their workforce with specific levels of Saudi nationals (Al Abdulkarim, 2018). Second, the long-term socioeconomic reform disposition, represented by Saudi's "Vision 2030"

which is the primary roadmap for the Kingdom's economic and social policies, including diversifications of government sources of revenue.

Furthermore, a long-term plan for the development of Saudi human resources and the formation of a national workforce has been established in order to support the growth of the national economy. With the Kingdom's commitment to developing human resources, which encompassed both men and women, it provided a chance for women to enter the Saudi labour force. Corporations, whether in the public or private sectors, are required to comply with legal standards that guarantee both diversity and equality among their employees. Women continue to face administrative, regulatory, and societal barriers that prohibit them from participating in the job market on an equal basis with males. Saudi women, who make up 51 percent of the overall population, make up 16 percent of the total employment, with the majority of these workers employed in the education and medical sectors, since the educational opportunities accessible to Saudi women are restricted to a few fields. Saudi Arabia has been implementing programmes aimed at assisting women, and the Saudi government has enacted legislation to provide assistance to women who are employed through provisions related to maternity leave, vacation time, and nurseries, among other things. The Saudi government has also sought to increase the number of women employed in its administrations, as well as the number of women in general (Galloway, 2020).

2.10 Turkey Profile

Turkey is a country that is uniquely positioned geographically, situated partially in Asia and partially in Europe. All through its history, it has served both as a barricade and a bridge between the two continents at the same time. Turkey has its sovereign border demarcated by Greece and Bulgaria which are situated on its northwest; by the Black Sea which is situated on its north; by Georgia which is situated on its northeast; by Armenia

which is situated on its east, by the Azerbaijani exclave of Nakhichevan and Iran; by Iraq which is situated on the southeast; by Syria which is situated on the south, and by the Mediterranean Sea; and by the Aegean Sea which is situated on the west. The largest city in the country is Istanbul, which spans Europe and Asia, while its capital is Ankara.

The date 29 October 1923 marks the auspicious date for Turkey as it commemorates the declaration of Turkey as the Republic of Turkey ensuing the collapse of the Ottoman Empire, as well as it being the date of its independence. Subsequently, the years between 1923 and 2018, saw Turkey as a parliamentary representative democracy. In the 2017 referendum, a system of Presidency. The newly adopted system became effective as of the presidential election in 2018, which provides the President with full control of the executive power, inclusive of the power to issue decrees, assign his own cabinet, formulate the budget, dissolve parliament through holding early elections, and command the engagements of the bureaucracy and the courts. The Prime Minister's office has been nullified and disintegrated, and its powers alongside those of the Cabinet have been hand over to the President. The President is the Head of State and stands elected for a five-year term through direct elections. The first president elected by direct voting at the polls is Recep Tayyip Erdogan. The constitution of Turkey governs the legal framework of the country. It establishes the key principles of the government and launches Turkey as a unitary centralized state.

In terms of the economy, there were more changes made to the economic policy during the 1980s, inclusive of the encouragement to attract foreign investment, the creation of joint enterprises, a decrease in the comparative significance of the state sector, and a forceful export initiative. By the 1990s, inflation persists to be a grave issue and the per capita gross domestic product of Turkey persisted to be much less in comparison to most of the Middle Eastern and European countries. By 1997, the inflation rate of Turkey had

reached nearly 100%. Thus, a one-and-a-half year economic monitoring program was launched with the International Monetary Fund, which resulted in substantial success in reducing the rate of inflation in the ensuing two years. Faced with a financial crisis in 2000–2001, Turkey had no choice but to receive an additional term of reforms which were supported by the IMF. In the first ten years of the Twenty-first century until 2009, the economic development of Turkey was robust, during this time the global economic crisis had forced Turkey into a short period of recession that was ensued by a recovery phase. Turkey is categorized as an upper- income country. In 2018, the gross domestic product was valued to be USD 2.3 trillion (USD 28139 per capita) in purchasing power parity. An estimated 5.82% was generated by the agricultural sector to the GDP, while 29.47% was generated by the industrial sector, and 54.26% was generated by the services sector (World Bank, 2020). Turkey is deemed to be the nineteenth leading economy at the global level. Turkey is among the founding members of the Organization for Economic Co-operation and Development and the G20.

In 2018, the workforce was calculated to stand at 32.83 million. Approximately 55.32% of the workforce is engaged in services, an estimated 26.31% of the workforce was engaged in the industrial sector, and an estimated 18.38% of the workforce was engaged in the agricultural sector. At present, the move from agricultural labour-intensive initiatives to more services-based initiatives have been wholly credited for the substantial rise in the overall labour productivity. The workforce in the industrial sector is immensely unionized, but the government has limited certain union activities. The Turkish Confederation of Labour and the Labour Unions Confederation are the most extensive unions. The union membership is calculated to be 13.8 million in totality. In 2018, the overall unemployment was estimated to stand at 10.89%. The unemployment rate for males is estimated to approximately 9.5% of the workforce, and the unemployment rate for females is 13.7% of the workforce. Women constituted approximately 25% of the

entire workforce but constituted only 60% of the agricultural workforce (World Bank, 2020). The main and significant source of national revenue for Turkey is derived from the remittances sent by the Turks who are working abroad, predominantly in the European Union and the Middle Eastern countries.

In 2018, the population of Turkey stands at 82 million people. Of which, 24.6% of the total population are those in the cohort within the age group range of 0 to 14 years of age; another 66.9% comprises of the cohort within the age range from 15 up to 64 years of age. Meanwhile, 8.5% constituted the senior citizens who are 65 years old or above. The young dependency ratio has decreased from 52% in 1996 to 37% in 2018, whereas the old-age dependency ratio has increased from 9% in 1996 to 13% in 2018. This is because the number of elderly people has increased more rapidly than the number of young people. In 2018, the fertility rate was 2.07 births per woman. Since 1960, life expectancy has risen rapidly, with a life expectancy of 74.45 years for males and 80.34 years for females in 2018 (World Bank, 2020).

According to Development Plan (2014 - 2018), the total fertility rate was dropped below 2.10 and this rate decreased down to 1.02 in sections where education and income levels are high. Moreover, it is predicted that the proportion of the old population within the total population is increasing as a result of the decrease in the infant death rate and the extension of the lifetime expected at birth, and the working-age population will begin to decrease as of 2038 and the total population after 2050 if no precautions are taken. In this framework, the need has been expressed for increasing the fertility rate with population policies and developing efficient policies with a convenient timing oriented to ageing population. Accordingly, Turkey has again started to implement Pronatalist population policies since 2014.

Turkey has become a nation with low fertility and death rates in recent years. This is linked with a variety of hazards that have been seen in certain nations, such as an ageing population and a decreasing working-age population, among others. According to the administration, they served as the foundation for a new population strategy. Women are encouraged to have at least three children each, according to this recommendation. There were other indications of a new policy, such as talks about limits on induced abortions and Caesarean sections, as well as efforts for extended maternity leave, chances for women to retire early, and a one-time child payment. It may be seen, together with the declaration of the necessity for a new pronatalist population strategy in the most recent Five-Year Development Plan, to be a message intended to assist in the achievement of economic, social, and political objectives via demographic transformation (Yucesahin et al., 2016).

According to the Turkish Statistical Institute, even though women account for almost half of the country's population, the labour participation rate for women in 2019 remains at 34.5 percent, compared to 71.8 percent for males. The Turkish government is implementing a comprehensive initiative titled "More and Better Jobs for Women" in order to address the issues stated above. In addition to assisting women job searchers in obtaining employment prospects, the programme seeks to make a positive contribution to the development of acceptable working conditions for women in the workplace. As a result, the programme includes several projects that are focused on different dimensions of the difficulties that women face in accessing decent work in collaboration with key actors in the world of work in order to increase the number of women who work in decent working conditions and contribute to the promotion of gender equality.

Pertaining to education matters, there are five key sectors in the Turkish state education system. The primary education is free and obligatory, which starts at six years of age and

spans for five years. Village schools account for a significant portion of the elementary schools, with the emphasis on agricultural activities and handicrafts instruction as the focus. Almost all eligible children are enrolled in elementary schools, which serves as their primary education. Secondary education, in which more than half of all eligible students are enrolled, continues for a total of six years, including middle school and high school programmes, each of which lasts three years, and is divided into two phases. Many technical and vocational institutions are available to those who have completed the middle school level and want to pursue further education. Over sixty of the more than 1,200 institutions of higher education have been designated as universities, out of a total of over 1,200 institutes of higher education. Istanbul, Ankara, and Ege (Aegean) universities are the most important, followed by the Middle East Technical University in Ankara, Istanbul Technical University, and Hacettepe University in Ankara. Beginning in 2017, Turkey has 190 universities. Based on publications by UNESCO the adult literacy rate in Turkey is 96.15%. The rate of literacy for male is 98.82%, and the rate of literacy for females is 93.5%. In 2018, the rates of enrolment are stated to be 94.5 percent for tertiary education, 107.6 percent for secondary school, and 102.5 percent for primary school. Government expenditure on education is about 4.8% as percentage of GDP in 2018 higher than expenditure on education in 1996. Based on the 2019 United Nations Human Development Report, the education index of the country is 72.7%, and Turkey was ranked at the position of 54 out of 189 countries in 2018.

2.11 United Arab Emirates Profile

The United Arab Emirates (UAE) is a nation in the Middle East that is located at the north-eastern extremity of the Arabian Peninsula on the Persian Gulf. Its sovereign boundary is delineated to the east by Oman, and to the south and west by Saudi Arabia, both of which are located on the Arabian Peninsula. Furthermore, it has maritime borders with both Qatar, which is located to the west, and Iran, which is located to the north. The

United Arab Emirates is a constitutional monarchy comprised of seven emirates: Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al Khaimah, Sharjah, and Umm Al Quwain. The capital of the country is in Abu Dhabi, which is the largest of the emirates. Each separate emirate is governed by a ruler, and they came together to form the Federal Supreme Council in order to coordinate their efforts. In the United Arab Emirates, the President is chosen from within the ruling family.

Based on the World Bank, the population of the UAE is estimated to be 9.6 million in 2018. The population constitution for males stands at 69.4%, while the constitution for females constituted the remainder which is 30.6%. The population of UAE is largely young and is made up of a cohort within the age range of 15 to 64 years old estimated at over 84.3%, with approximately 14.6% in a cohort who are younger than 14 years old, and a cohort who are 65 years old and above with a percentage of 1.15%. The young dependency ratio has decreased over time reached 17% in 2018, whereas the old-age dependency ratio come to 1.3% in 2018. The UAE has a comparatively high level of life expectancy; with the males having a life expectancy of 77.13 years, and for females' life expectancy is approximately 79.16 years, and the overall life expectancy is 77.81 years. In 2018, UAE's fertility rate was 1.41 births per woman (World Bank, 2020).

Government officials in the United Arab Emirates are plagued by the problem of population imbalance, which has been a persistent issue for decades. The reason for this is because the issue presents economic, social, political, and security difficulties. To solve the demographic imbalance, the government has taken three policy tracks thus far: promoting national births, emiratization of employment in both the public and commercial sectors, and strict emigration and immigration restrictions.

The first track involves boosting the rate of birth among UAE citizens. It consists of two programmes that are intertwined: promoting births by providing a lifetime stipend

for every kid in national families, and encouraging national young to marry and start families. In order to implement this goal, the government has implemented very liberal welfare programmes, including providing free education to national children from kindergarten through graduate and post-graduate school, as well as free health care from birth to death.

Emiratization (nationalization) policies, which identify the issue as a lack of employment opportunities for Emiratis, include the replacement of expatriates with Emiratis in positions in both the public and private sectors of the economy. Most recently, the United Arab Emirates government acknowledged that a disparity in population size has an adverse effect on unemployment among graduates of the contemporary educational system (A. M. E. Mansour, 2015).

According to women's rights in the UAE (2021), in order to safeguard women and promote gender equality in all areas of society, the UAE has implemented certain policies, regulations, and programmes. All government entities and corporations must have a female director on their board of directors, according to the National Strategy for Empowerment of Emirati Women 2015-2021. Other initiatives include a gender balance guide at work, access to all levels of education and vocational training for women at no cost, socioeconomic and political empowerment, and maternity leave provisions.

The development of the UAE has taken only five decades to evolve into one of the most affluent countries globally. This young confederation of emirates has experienced a remarkable and stable economic expansion throughout its history with fleeting stages of recessions only, for example, the years 2008-2009 where the world witness the global financial and economic crisis, with additional few mixed years beginning in 2015 and continuing until 2019. The average real Gross Domestic Product (GDP) expansion between 2000 and 2018, was near 4%. UAE's economy is considered the second largest

economy in the Gulf Cooperation Council with a real GDP of USD 650 billion in 2018, following after the Kingdom of Saudi Arabia, which is the leading economy in GCC.

Currently, the United Arab Emirates is considered as one of the wealthiest countries in the world, with its GDP per capita approximately 80% greater than the OECD average. Under the helm of the UAE leaders, the economic diversification initiatives have been mobilized prior to the oil price crash in the 1980s. Prevalently, at the present day, the country the topmost diversified economy in the Middle East and North Africa (MENA) region. Even though the oil and gas sector have no significant part in the UAE economy, the diversification initiatives have yielded results in terms of robustness during the episodes of oil price instabilities and economic turmoil. In 2018, the contribution of the oil and gas sector to the overall GDP was 26%. The Tourism industry serves as the prime economic driver to the economic expansion and development of the whole UAE economy. Dubai is acknowledged as the most popular tourist destination in the Middle East. Dubai is positioned at spot number five for the top spot of popular tourism crowd-puller destination in the world based on the annual MasterCard Global Destination Cities Index.

There are copious labour problems that bother the United Arab Emirates, caused by the unequal ratio of expatriates as to the local Emirati residing and working there. In 2018, the expatriates amounted to over 85% of the total workforce of 6.8 million, signifying that national comprised less than 15% of the employed population. A new national strategy was revealed by the UAE government that announced the 'Emiratization' program of the workforce to be the core of the country's future economic expansion. In the past few years, the government has delved into numerous methods to generate employment prospects for the citizens of UAE in several economic sectors. Simultaneously, however, most Emiratis are unwilling to engage in poorly paid jobs

particularly those in the private sector owing to the welfare assistance of the UAE government.

In terms of education, the public schools in the United Arab Emirates are supported by the government, and the curriculum is designed to contribute to the country's development objectives. The Arabic language is the primary medium of instruction in public schools, with English as a second language receiving significant attention. Private schools that are internationally recognised are readily available in the United Arab Emirates. Nationals of the United Arab Emirates are entitled to free public education, while private institutions charge varying prices. The Ministry of Higher Education is in charge of keeping an eye on the higher education system. The admission of students into the undergraduate level at its undergraduate institutions are under the purview of the ministry. For 2015, the rate of literacy for UAE was 93.23%, which was a 3.19% rise from the 2005 literacy rate. The improvement of education and research are the core concerns for the UAE. The relevant enterprises comprise the formation of the CERT Research Centres, the Masdar Institute of Science and Technology, and Institute for Enterprise Development. Based on the QS Rankings, the high-ranking universities in UAE are the United Arab Emirates University, Khalifa University, the American University of Sharjah, and the University of Sharjah. In 2018, the rates of enrolment are stated to be 39 percent for tertiary education, 109 percent for secondary school, and 108 percent for primary school. Government expenditure on education is about 3.3% as percentage of GDP in 2018 higher than that in 1996. Pertaining to the education index, in 2018, UAE's education index was 80.2% and it was positioned with a country ranking of 31 out of 189 countries.

2.12 Chapter Summary

This chapter provided an overview of selected Middle East countries namely Bahrain, Egypt, Iran, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Turkey, and the United Arab

Emirates. In addition, this chapter discussed each country's economic, social, security, human development, educational issues, and political issues over time.

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CHAPTER 3: LITERATURE REVIEW

3.1 Introduction

Among the top key factors in the forthcoming economic and societal perspective scenario is demographic change. Many authors have conducted examinations on the way shifts in the population's size and age constitution impact economic growth. Typically, the channels via which demographic changes influence the economy generally cover the achievement of education and participation of a new workforce in the labour market. In this context, some empirical studies stated that there is a relationship between demographic change, education levels, and labour force participation rate through their influence on the sustainable economic growth intensity. Accordingly, the theoretical and empirical literature will be explicated in this chapter. Section 3.2 presents the economic growth theories (Neoclassical and Endogenous). Section 3.3, 3.4 and 3.5 review the empirical studies that were organized into these three sections: first, demographic change and economic growth. Second, education levels and economic growth, and third the effects of education and fertility on female labour force participation. Section 3.6 explains and summarizes the gaps discovered in the literature review.

3.2 Economic Growth Theory: Neoclassical and Endogenous

This section reviews the economic growth stages pertaining the neoclassical theories and endogenous theories to elucidate on their significance in explicating the part played by population change and education for the purpose of attaining high economic growth. The theoretical framework for this research is developed by the neoclassical and endogenous growth theory, that emphasize human capital investment and education is perceived as the key component of growth. Thus, this study will investigate the neoclassical and endogenous growth theory, by investigating the impact of the age structure and education on the economic growth.

3.2.1 Neoclassical Growth Models

3.2.1.1 Solow Growth Model

A model of economic growth was formed by Solow which attempted to clarify the causes of economic growth in 1956. It was assumed by Solow that output is generated by labour and capital under constant returns to scale, with declining marginal productivity of capital and exogenous technological change. In Solow's model, the diminishing returns to capital in the long run would be neutralized through enhanced technology for the purpose of increasing the efficiency.

In this instance, changes in output could be described based on the variations in the inputs of the production function and variations in productivity. The production function can be written as:

$$Y = A K^{\alpha} L^{\beta} \quad (3.1)$$

Where Y signifies aggregate production, A signifies the technology level, K denotes capital, L denotes labour, α and β signifying constant terms that conveys the responsiveness of output to capital and labour, accordingly. The neoclassical growth model considers A as an exogenous efficiency or technology parameter; the greater the amount of A is for any given value of inputs, the greater is the consequent output. It was forecasted in Solow's growth theory that productivity growth would deteriorate to zero when capital per worker multiplies, except in cases of occurrences of certain technological variation. The function can be reorganized based on output per worker by dividing equation (3.1) by L to get the following:

$$y_t = A k^{\alpha} \quad (3.2)$$

From the production function, output per worker is dependent upon capital per worker. Based on the neoclassical growth theory, the determination of the economic growth rate is by the initial level of output and the level of savings. In equilibrium, savings equal

investment. Consequently, a rise in savings rate will boost capital. Nevertheless, a scarcity of savings does not automatically implicate that a country is indicating insufficient physical investment as net international capital inflows might offset insufficient savings. Nonetheless, in the short term, a rise in the savings rate will decrease consumption and subsequently the aggregate demand and output will also be decreased; however, in the long term, output per capita will resume to be equal to the technological change rate, which is presumed to be exogenous in the neoclassical model.

In this model, technological progress, that ascertained exogenously, is gauged by total factor productivity. Technological progress generates economic growth. The economy continuously converges to a steady state of growth rate and depends on technological progress rate and labour force rate. Countries having high savings rates will grow swiftly. The ensuing equation explores how capital accumulates in Solow model. Increasing the stock of physical capital equalizes total investment with less depreciation of capital:

$$\dot{K} = sY - \delta K \quad (3.3)$$

Because of the assumption on constant returns to scale in the production function we can insert equation (3.3) into the relationship $\frac{\dot{k}}{k} = \frac{\dot{K}}{K} - \frac{\dot{L}}{L}$ and get $\dot{k} = \frac{sY}{K}k - nk - \delta k$. This gives the dynamic equation for capital accumulation in terms of physical capital per worker:

$$\dot{k} = sy - (n + \delta)k \quad (3.4)$$

Where \dot{k} denotes stock of capital, s signifies saving rate, y signifies output per worker, n signifies population growth, δ signifies depreciation rate, and k denotes capital per worker. Equation (3.4) is a differential equation that depends on capital per worker. $(n + \delta)$ is the effective depreciation rate for the capital per worker. When the rate of saving equal 0, capital per person will depreciate slightly due to the depreciation of capital (δ)

as well as due to increasing the population (n). Based on the model, changes in capital per worker are determined by saving per worker, population growth, and depreciation rate.

Solow's model provides forecasts about how these variables impacts on the steady-state level of income. Raising the saving rate results in the increase in the level of output. Whereas, increasing the population will result in decreasing the capital per worker level. Consequently, the Solow model offers a possible account why nations which possess small population size are more affluent than nations which possess high population size. Meanwhile, the greater the rate of saving, the richer the country.

3.2.1.2 Augmented Solow Model

The augmented Solow model recommended by Mankiw et al. (1992) comprises the accrual of human alongside physical capital for the development of a more superior theoretical version of the Solow growth model. This model verifies the value of knowledge in establishing economic growth. Labour is not controlled exogenously by population growth but is regulated by the accrual of skills whereby families have invested their savings in human capital. Employing the Cobb-Douglas function, the production function is expressed as:

$$Y = K^\alpha H^\beta L^{1-\alpha-\beta} \quad (3.5)$$

Dividing by L :

$$\frac{Y}{L} = \left(\frac{K}{L}\right)^\alpha \left(\frac{H}{L}\right)^\beta \quad \gg \quad y = k^\alpha h^\beta \quad (3.6)$$

The equation illustrates that the regulation of the income per worker is through two factors: physical capital per worker ($\frac{K}{L}$) and human capital per worker ($\frac{H}{L}$). The rate of change for the physical and human capital is provided as follows:

$$\dot{k} = s_k y - (n + g + \delta)k \quad (3.7)$$

$$\dot{h} = s_h y - (n + g + \delta)h \quad (3.8)$$

Where δ signifies the proportionate depreciation for both physical and human capital, s_k signifies the part of income invested in the physical capital, and s_h signifies the part that is invested in human capital, and which should stay constant over time. To resolve the steady-state solutions \dot{k} and \dot{h} , Mankiw, Romer, and Weil employs the steady state income equation.

$$\ln\left(\frac{Y}{L}\right) = \ln A_0 + g t - \left(\frac{\alpha + \beta}{1 - \alpha - \beta}\right) \ln(n + g + \delta) + \left(\frac{\alpha}{1 - \alpha - \beta}\right) \ln s_k + \left(\frac{\beta}{1 - \alpha - \beta}\right) \ln s_h \quad (3.9)$$

The equation indicates how income per capita is linked to population growth and the accrual of human and physical capital. The physical capital savings rate s_k was gauged by the investment share in GDP, while the human capital savings rate s_h was gauged by the percentage of working age population who are in secondary school. A significant indication of this model is that economic growth is endogenously and externally decided through the choices made by families to save and invest in physical and human capital, enabling policies to be made for the promotion of a greater efficiency in savings allotment.

Population growth has the potential to expand the available workforce, and the steady state values of capital and income will expand at an equal proportionate rate as labour (workforce). Thus, long-term growth is sustainable via a population expansion for constant levels of capital and output to be present. Nevertheless, a rise in the population cannot expand the capital or output of every individual worker in the long-term. Diminishing returns determines capital accumulation, and consequently, economic growth is unsustainable because it is input-driven (Krugman, 1994). Thus, the achievement of long-term economic growth is only possible via technological and human capital development that might enhance total factor productivity (TFP).

The enhanced Solow model indicates that the variations in savings, education, and population growth would be able to explicate cross-country variations in income per capita. It has been illustrated from their investigation of the data that the three variables explicated the largest part of the international variation.

3.2.2 Endogenous Growth Models

Based on the Solow model, only through exogenous technological changes that economic growth does happen. The part played by education in enhancing technological change was considered by them. Furthermore, the endogenous growth that were highlighted by economists about the importance of public and private foundations that boost innovations were not taken into consideration. Additionally, they verify that the augmentation of innovation and human capital investment is attained through the enhancement of productivity. Investment in human capital and education were perceived as the core factor of growth. Moreover, investment in R&D is considered as the basis for technological advancements. The hypothesis of a diminishing return to capital is unreliable when both physical and human capital is introduced into the production function is explored by endogenous growth theories. There is the assumption that there is constant or increasing returns to capital. There exists an extensive category of models considering numerous factors thwarting any diminishing inclination of returns to capital. This current study is particularly interested with the ensuing two sub-classes: knowledge accumulation and human capital formation. There is an extensive class of models considering diverse factors countering any diminishing inclination of returns to capital. The ensuing are the two sub-classes concerned:

3.2.2.1 Technical Change

The following models explicate technological change that are produced endogenously. The initial precursor of this type of model was from a paper by Arrow (1962) on ‘learning

by doing'. An endogenous growth theory which was developed by Romer (1986) had incorporated human capital, where human capital is determined through endogenous means; explicitly, human capital responds to economic inducements which are developed into the model. Romer's notion of the endogenous growth theory perceives knowledge as a supreme and results in positive results. He asserted that technological innovations are enablers towards the attainment of long-term indefinite economic growth of a country. The fundamental notion of Romer's model is concerning the existence of an offset between consumption in present day time and knowledge which can be utilized to generate greater consumption in the future. He concretized this notion according to a research technology that generates knowledge from unavoidable consumption. Knowledge is inferred as being cardinally measurable and not to depreciate it is like perennial capital.

Technological change as obtained via research and development initiatives form the foundation for the endogenous growth models as utilized by Romer (1990), Grossman and Helpman (1991), Philippe Aghion and Howitt (1992), and P Aghion and Howitt (1998). The theory engages on the exploration and understanding on the part played by technological progress by considering that it is an endogenous factor within an endogenous growth model. Additionally, the augmentation of productivity and growth is attained through the contribution of innovation and technology by the utilization of novel and more superior procedures and products. Consequently, this current study matches and accompanies the study on R&D related to productivity of the industry of firm level (Romer, 1994).

3.2.2.2 Human Capital Formation

Inspired by Arrow's models (1962), Uzawa (1965), Romer (1986), and Lucas (1988) created an endogenous growth theory and assert that the core driver of economic growth

is human capital. Lucas conjectures that over a duration of time, human capital expands as individuals apportion part of their time towards education, and subsequently the skills acquired enhances productivity.

He assumes that the worker segregated his time between production and human capital accumulation, u is devoted to production, $1 - u$ to human capital accumulation, and h signifies current stock of human capital. The basic equation of model is:

$$Y = K^\alpha [uhL]^{1-\alpha} \quad (3.10)$$

Lucas conjectures that human capital increases steadily in the due course of time as follows:

$$\Delta h = \omega(1 - u)h \quad (3.11)$$

This equation indicates that the variation in accumulated per capita education is proportional to the existing stock of education, with the equal amount of the proportional change reliant upon the amount of time spent learning instead of producing and the productivity of learning ω . Reorganizing equation (3.11) results in:

$$\frac{\Delta h}{h} = \omega(1 - u) \quad (3.12)$$

The growth rate of labour-enhancing human capital will be constant on the condition that ω and u are constant. Based on a study by Lucas (1988), merely a small number of diminishing returns to human capital would be needed to thwart the production of permanent growth, which is also applicable to physical capital. However, in order to disable diminishing return, technological change can be employed, and hence raises the output per capita.

3.3 Empirical Studies - Demographic Change and Economic Growth

3.3.1 Population Growth and Age Structure

Although the relationship between demographic change and economic growth has been widely studied for several decades, the relationship is still under debate, with the argument centring on whether demographic change hampers or reinforces economic growth. Furthermore, while earlier studies addressed the relationship between population size and economic growth, the later studies focused on the relationship between age structure and economic growth.

Early studies addressed the correlation between population growth and economic growth. One such study is Bucci (2008) who highlighted three views that analysed the effect of population growth on economic growth. The first view is the pessimistic view. Based on this approach, population growth hampers economic growth. Malthus (1798) noted that humans were limited in their birth rates due to a shortage of resources. Hence, an increasing population growth coupled with lowering technological progress leads to the creation of famine, which reduces the population growth as well as economic growth. In the research by Kelley and Schmidt (1995), the result shows that population growth has a negative effect on economic growth. According to Becker et al. (1999), higher population growth depresses economic growth through diminishing returns because the supply of land, physical capital, and knowledge remain unchanged or rise at a slower pace compared to the population.

The second view is the optimistic view that assumes that population growth reinforces economic growth. Kuznets (1967) documented that population growth promotes economic growth through various channels, including the rising stock of knowledge, increasing savings, and the growth of the labour force. In addition, Kremer (1993) built a simple model that demonstrates a positive relationship between population growth and

economic growth. He assumed that a rise in output per capital increases population growth, and that population growth contributes to increased total research output by providing resources to create new technologies. Kremer's model reveals that the increasing population is due to technological progress that enables rapid population growth.

Galor and Weil (1999) assumed that there is a direct relationship between population size and technological progress rate. The demographic transition is created by relating population growth to investment in human capital and technological progress. Moreover, Jones (2001) developed a model that links population size and technological progress, which increases the population leading to an increase in new ideas. He suggested that the established institutions to support innovation and create new ideas may result in an explosion of economic growth.

The unified growth theory suggests that the transition from stagnation to growth is attributed to the interaction between population and technology and its effect on the demand for human capital, thereby resulting in the onset of the demographic transition (Galor, 2005). Furthermore, in the study by Galor and Moav (2002), it was shown that sustained economic growth is due to the presence of individuals of the "quality type" in the population, which supports technological progress and growth. They confirmed that population increase induces technological progress and a demographic transition, and, therefore, achieves sustained economic growth. According to Hansen and Prescott (2002), technological progress plays a vitally important role in the transition from a land intensive to a modern industrial economy.

The third view is the neutralism view. Thirlwall (1972) and Dawson and Tiffin (1998) emphasized that no significant association was found between population growth and income per capita. Similarly, when the control variables were added into the regression

model, Bloom et al. (2003) revealed that there is no association between population growth and economic growth.

The dynamics of age structure positively influence the economic growth and general standard of living (Bloom et al., 2001; Choudhry & Elhorst, 2010; Uddin et al., 2016). The development impact of changes in age structure is obtained through several paths. Firstly, a rise in the share of the working-age population means that more people are able to work. In other words, the working-age population produces more than its consumption, so the per capita output is increased. The second path is a rise in the savings. The working-age population produces and saves more, which causes a higher level of investment and an increase in the output. The third path, which is the most important, is the rise in human capital due to the change in age structure.

Recently, several studies have been conducted to investigate the effect of age structure on the economic growth of different economies and groups of economies. Bloom and Williamson (1998) investigated the effect of the share of the working-age population on economic growth. They concluded that the working-age population has a positive effect on economic growth. A decline in the mortality rate without a similar decrease in the fertility rate leads to an increase in the growth rate of the population, in particular, the young population. When the young people become old enough to join the labour market, the labour force increases, and thereby achieves faster economic growth. For developing countries, Crenshaw et al. (1997) found that an increase in the child population hinders economic progress, while an increase in the adult population fosters economic development in 75 developing countries from 1965 to 1990. They noted that many countries achieved positive economic growth rates while increasing the dependency ratios. Baby boomers may slow economic growth, but do not prevent economic development. They also speculated on a demographic ratchet effect whereby economies

lie fallow during baby booms but grow rapidly as boomers age and take up their economic roles in society.

Moreover, Kelley and Schmidt (2005) created a versatile model to examine the part played by the population in the development of the economy. They explained that the demographic impacts (deriving mainly from declining birth and death rates) combine to exert positive contributions to trends in per capita GDP growth. Subsequently, a combination of demographic change effects constituting 20% of per capita output growth impacts all over the globe were disclosed by them, with Asia and Europe taking larger share proportions. Kögel (2005) reported that the young dependence ratio had a negative impact on total factor productivity growth in part, this may be explained by the fact that a high young dependence ratio would lower aggregate savings, and that a decline in aggregate savings will result in a decrease in total factor productivity growth. Therefore, this study demonstrated that age structure impacts the top significant determinant of international differences in terms of per worker output.

The empirical analysis by Choudhry and Elhorst (2010) noted that the GDP per capita is significantly correlated with the population of working age, but insignificantly correlated to the children and ageing dependency ratios. They found that population dynamics explained 46 percent of economic growth in GDP per capita in China over the period 1961–2003, 39 percent in India, and 25 percent in Pakistan. They also discovered that the decline in child dependency was the major contributor to GDP per capita growth. Based on a study by Lee and Mason (2010), a gradual population growth that is slow-moving, in addition to a minimal fertility rate will result in an enhanced capital volume and greater per capita income. Implications from the empirical results indicated that the expenditures for human capital for each child are significantly greater when the fertility is lesser, to such a degree that the outcome of the overall fertility rate, and the human

capital expenditure for each child is approximately an even proportion of labour income traversing the countries, even though the total expenditure for each child decreases with fertility.

Additionally, Bloom and Canning (2011) argued that the leading indicators of economic growth (taking the income per capita to be proxy) entails the population expansion and the age composition. Undeniably, a proportion of a third of the economic “miracle” of East Asia was the result of changes in the demography. Likewise, the approval of birth control in Ireland that was made legal in 1980 had triggered a decline in fertility, which in turn had prompted swift economic growth. Conversely, the slow rate of fertility decreases in a huge part of Sub-Saharan Africa that was attributed to the decades of economic strife in the region. According to the researchers, they stated that, in the beginning, the explosion in the birth rate had the effect of reducing the progress of the economy, as there is a necessity for the children to be provided for in terms of food, clothing, shelter, education, and care. However, ultimately (ensuing 15 to 20 years) this huge group will attain the peak ages for employment and savings, and thus this will be followed by the per capita productivity capacity of economic expansion. Hence, it will facilitate the potential rapid growth for the nations.

In China, Wei and Hao (2010) indicated that the swift economic expansion of China has been considerably attributed to demographic structure changes. The significant decrease in the dependence ratio, especially the decline in the young dependency ratio because of fertility declines, has been responsible for about one-sixth of the provincial growth rate in GDP per capita between 1989 and 2004. A substantial feedback impact of economic growth on demographic behaviours was also discovered, mediated through birth rates, marriage ages, and life expectancy, as discovered by the researchers. In India, Aiyar and Mody (2013) disclosed that as for the working-age ratio, the level and growth

rate were associated with the development of the economy of India. Notably, a significant part of the growth acceleration of the country in the 1980s can be linked to changes in demographics. They concluded that although currently the major growths in the working-age proportion are experienced in the southern and western states which have resulted in the latest economic growth in India, the greater part of the residual changes in the demography will be clustered in lagging states. Hence this situation will result in increasing the possibility of narrowing the disparity of income equity gap between the affluent and underprivileged states.

Based on a study carried out by Song (2013) in an examination of such impacts on the economic growth in thirteen Asian countries during the period from 1965 to 2009, it was revealed that the population growth rate has a negative effect on economic growth while the working-age population growth rate has a positive impact. When looking at the changes in different age groups, there is a substantial and negative correlation between the young people and the economic growth. There is negligible significant impact of the elderly population growth due chiefly to the fact that the elderly people has not reached a state of major demographic force yet in the majority of Asian countries, apart from Japan. These results support that the fast-economic growth in Asia may be attributed to the positive demographic change that happened there.

In Sri Lanka, Menike (2014) who examined the impact of demographic transition on economic growth in Sri Lanka for the period 1963-2007. He showed that the population growth rate has an important factor determinant of economic growth. The evidence suggested that a decrease in mortality will promote economic growth. While there is an unceasing drop in the infant mortality rate in the country, there will be a rise in economic growth prospects. Menike additionally disclosed that the labour force growth rate has not successfully affected the GDP growth rate. This is due to the economy is not absorbing

the working age population into productive employment. Particularly, as from 1960, due to the increase in free education for the whole of the country, there is a substantial rise in the quality of new applicants into the country's labour force. However, this educated workforce could not be taken in by the economy. Among the core explanations for this predicament is due to the education system of the country. There is a mismatch of the skills offered by the education system and the needs of the labour market.

According to Zhao and Zhu (2016), in the 12 economies observed in their study, the average contribution from the rejuvenation of the population to economic growth at the stage of a declining population dependency could reach 7%. The contribution of the demographic factor is about 8% in Japan, South Korea and Taiwan of China, and 6.3% on the Chinese Mainland. Both in Japan and on the Chinese Mainland, where there has been the phenomenon of population ageing, and in South Korea and Taiwan of China, where the rejuvenation of the population is still ongoing, the rate of economic growth has started to drop and far beyond the contribution of the demographic factor.

According to a study carried out by Ahmad and Khan (2018) on developing countries, they had examined the part played by age-structure change and human capital in the economic growth of 67 developing countries across the time range of the years between 1960 up to 2014. The outcomes disclosed that changes in age-composition and human capital and have a positive impact on the growth of the economy throughout the disaggregated levels. According to their empirical findings, the process in the deterioration rate of fertility has commenced for Sub-Saharan Africa and low-income economies. The process can be fast-tracked through a national population policy that emphasizes on the reduction of fertility. This will result in a reduction in youth dependency comparative to the working-age population per-capita that have a long-term impact on the economic growth. Furthermore, human capital growth is another aspect to

consider, in which case there arise a necessity for low-income economies to emphasize on. This is because, for their productivity, the human capital is associated with working-age population and labour force.

Additionally, Azomahou and Mishra (2008) in their study concluded that aggregate population growth and the younger age population growth have a favourable impact on the economic growth of countries which are apart from OECD countries. Meanwhile the impact of the retired cohort's growth is observed to be negative on the same. They also reported that non-OECD countries have the prospects of experiencing further growth opportunities from the accrual of working age cohort in the population. Based on a study by Hajamini (2015), it was revealed that changes in the age composition of the population impacts on the per capita income. The per capita income is impacted significantly and negatively in a constant manner by the young dependency percentage. Meanwhile, conversely, the per capita income is significantly and positively impacted by the participation rate. The results also revealed that the per capita income is conversely impacted by the old dependency ratio in a fragile manner. The study revealed the importance of bringing about shifts in the age structure of the population as opposed to the expansion in the population of the developing nations.

Furthermore, based on a study by Cruz and Ahmed (2018), the influences of demographic shift on the development of the economy and on the state of poverty of 180 countries between 1950 and 2010 was analysed. They utilized the shifts in the portion of the working age cohort in the population and dependency ratios to gauge the shift in the demography. Results of the study reveal that a rise in the proportion of the working age cohort in the population has a favourable impact on the per capita Gross Domestic Product growth. Results also suggested that the favourable effect of a rise in the working age

population percentage on the per capita growth is frequently propelled by the decline in the child dependency ratio vis a vis changes in the old dependency ratio.

The impact of demographic change on the development of the economy in China was explored by Hsu et al. (2018). They discovered that generally in China, the demographic shifts are responsible for approximately 4% of the country's development. Meanwhile, the demographic shifts have a negative impact on the country in the period before 1980. With an extension to include population ageing, they found that ageing is not necessarily averse to growth. The empirical analysis also confirmed the idea that countries experiencing high population growth tend to be more negatively affected by population growth in terms of schooling than countries with low population growth. For OECD countries, Yoon et al. (2018) analysed the impact of demographic changes on the growth of the real GDP per capita in 30 OECD economies for the period of 1960–2013. The results showed that population growth, share of the elderly (65 and above), and share of those aged 15-64 affect real GDP per capita growth negatively.

In addition, a study executed by Sánchez-Romero et al. (2018) had highlighted on the influence of the demographic changes on the per-capital income growth in Western European countries. Insights from the top finding indicated that the increase in longevity and decrease in fertility constituted approximately 17% of the increase in per-capital income growth. They also studied the contribution of the demographic transition in terms of the population structure and the changes in labour supply and capital accumulation. The results suggested that the population structure accounts for 50% of the total income growth from 1850 to 2000, and hence the changes in labour supply and capital accumulation accounts for 50%.

In the study by Ahmad and Khan (2019), stated that the ratio of working age cohort and the growth rate of the labour force growth have a positive effect on the economic

development of developing economies. They also revealed that the dependency ratios have negative impact on economic growth. It shows that the fall in youth dependency means youth cohort enters the working-age population and provides growth opportunity for the economy. If this increasing workforce is swallowed successfully by the job markets, then it would yield high economic growth. Based on the conclusions of the study, further research for developing countries can be extended by adding disaggregated age groups by age and gender.

Added to the above studies, some studies have examined the effect of internal demographic composition of the working-age population on economic growth. One such study is Oliver (2015) who determined the association between population composition and the shift in the structure of economic system (proxied by real Gross Domestic Product per capita) for the period ranging from 1975 to 2011. The outcomes illustrate the fact that a rise in the number of age cohorts (15 to 24 years old, 25 to 34 years old, 45 to 54 years old, 55 to 59 years old and 77 plus years old) are associated with a rise in the real Gross Domestic Product per capita. These signify that with the entire factors being constant, and in instances when there is decline in the working-age cohort numbers in the population pool, then there will also be a reflective decrease in GDP per capita growth.

Zhang et al. (2015) focused on the demographic age structure economic impact in China, with the assistance of panel data sets obtained from 28 provinces in the country. Based on the analysis findings, they reveal that age structure changes (shifts in the size and internal demographic composition) related to the working-age cohort in the population, have an obvious influence on the economic growth rates in the provinces. In the period of the study (1990-2005), the age structure evolution constituted for approximately one-fifth of the GDP per capita growth, from which over half is related to internal demographic composition changes in the working-age population.

Moreover, Wongboonsin and Phiromswad (2017) assessed the effects of the demographic structure on the growth of the economy in 122 countries from 1960 to 2010. Their population classification involved five categories, with the young population being younger than 15 years old, the young workers aged within the age range of 15 up to 24 years old, the middle-aged workers aged within the age range of 25 up to 44 years old, the senior workers aged within the age range of 45 up to 64 years old, and the senior population comprising those of over 65 years of age. Such categorization enables the potential explanation that varying age cohorts have varying impacts on the growth of the economy. According to the outcomes attained, cohorts of young labour force, middle-aged labour force and senior labour force possess a favourable association with the development of the economy. Conversely, the cohorts of young population and senior population have a negative association with the economic growth.

In the context of the Middle East countries, there is a shortage in studies conducted to investigating the effect of the population age structure on the economic growth. As an exemplar, a study carried out by Rizk (2019) had investigated on the correlation between the changes in the demography and the economic growth via the employment of time series data in Egypt. Based on the outcomes, the increase in working age group within the population has intensified the GDP per capita for a long term and short term. Additionally, the findings indicated the decrease in the proportion of elderly population.

A recent study by Saxena (2019) emphasized on the instances of the opening and closure of demographic window for prospects in the economy, and discovered the time span for the attainment of the demographic dividend from 22 Arab countries. He found that the expected duration of demographic window differs for different country groups of the 22 Arab countries. The maximum duration of demographic window was expected to be 85+ years for the group of GCC countries and minimum duration was expected to be

15+ years for Iraq. The reason for very short duration of demographic window for Iraq may be because the window might have opened much later due to high child dependency ratio. In the six Arab states of Maghreb countries, the window was opened before 2015 in all the six Arab states and closed much later, and therefore the duration of demographic window was large (65+ years). In case of least developed countries, the demographic window may open late and may also close later. In summary, the countries' governments need to execute advanced preparations for the generation of employment opportunities for new entrants of the working-age groups. If the governments can create job opportunities for the workforce members, the countries would obtain the optimum dividend that could increase the GDP of the countries, and with the joining of female workforce, there could be doubling of the GDP.

According to Forouheshfar et al. (2020), the demographic transition in the MENA region started relatively late, however, it is happening considerably faster and could be regarded as an opportunity. All the countries in the region are facing the same demographic transition and could benefit from the twin "demographic dividends". The first dividend arises from changes in the population's age structure that influence the share of the working-age population this leads to an increase in output per capita. The second dividend comes from the increased capital due to the savings of a larger number of middle-aged workers approaching their retirement. The results show that the age structure of the labour force is a key component for employment and production dynamics and there are significant benefits of the demographic shift on economic activity. Governments can play an active role in helping those potential benefits take place and preparing the youth to be absorbed in the labour market by investing in labour-intensive jobs and developing training programs.

More recently, there are only a handful of authors of recent literature, who emphasized on the interactive part played by the age structure and human capital on the development of the economy. For instance, a study conducted by Lutz et al. (2019) had studied the significance of shifts in the age structure and the increase in human capital, and their impact on the economic expansion of 165 countries for the period from 1980-2015. As key factors of true demographic dividend, the authors stressed on education enhancement over the age structure and human capital dividend. Therefore, it is pertinent for the global population policies to cater in supporting the human resource base towards the achievement of sustainable development. In the context of African countries, Ojewuyi and Alimi (2019) in their study had examined the impact of age structure and human capital development on the Nigerian and South African economic development with the use of ARDL Model and annual data that ranged from the year 1991 to 2017. The authors revealed that working age share are not able to improve the growth of the economies as it has to be reinforced by enhanced investment on human capital. Thus, it is crucial for governments to focus on prioritizing all levels of education and identifying skills/competencies that could lead to a functional and productive education.

3.3.2 Population Ageing

This section will present the controversial debate about the impact of population ageing on economic growth. As such, the literature under two points of view, with the debate focusing on whether population ageing has positive or negative impact on economic growth. Many studies have found that that population ageing negatively influence the economic growth. One such study is Bloom et al. (2010) reported that an increasing population ageing lead to the declining economic growth in the context of OECD countries. In a study of 15 EU countries, Lindh and Malmberg (2009) concluded that population ageing will be accompanied by stagnation in EU GDP growth.

A similar result showed that the declining economic growth could be attributed to the increasing population ageing (Hu et al., 2012; Loumrhari, 2014; Sun & Liu, 2014). Park and Shin (2012) indicated that there will be a sizable adverse economic impact where population ageing is more advanced in 12 developing Asian economies. In addition, Ghavidel and Mirghiyasi (2018) demonstrated that the negative impact of population ageing on economic growth appears in countries where the life expectancy index is greater than 70 years, whereas the impact of population ageing on economic growth is not negative in countries where the life expectancy index is less than 70 years.

Maestas et al. (2016) used predicted variation in the rate of population ageing across U.S. states over the period 1980-2010 to estimate the economic impact of ageing on state output per capita. They discovered a rise of 10% in the fraction of the population aged above ages 60 old reduces the GDP per capita growth rate by 5.5% in the United States of America states. Two-thirds of the reduction is due to slower growth in the labour productivity of workers across the age distribution, while one-third arises from slower labour force growth. Outcomes of the study also implicate that there has been lagging of the annual GDP growth by 1.2 % points these ten years and will lag by 0.6 % points by the next ten years caused by the ageing population.

In Europe, Cuaresma et al. (2016) indicated that population ageing in Europe is expected to have effects on economic growth that will create obstacles to further in come convergence in the EU unless they are actively counteracted by economic policy. They also reported that in Europe, the current economic growth shows a movement in the distribution of age of the labour force towards elderly aged cohorts, and greater ratio of old age dependency, which are equally linked in general, to the lesser growth rate of the GDP per capita income.

Kajimura (2020) found that increasing the proportion of old people has a detrimental effect on economic development in the long run, according to the study. Economic growth will be supported, however, by increased life expectancy and a decrease in the youth population ratio. Strengthening human capital by encouraging labour force participation and extending the years of education could offset the negative effect of having a greater number of elderly people in the population and thus boost economic growth. In the case of Australia, Uddin et al. (2016) had studied the association between the ratio of dependency and real GDP for duration of the years from 1971–2014. The result showed that the dependency ratio has a negative response on GDP per capita.

Few studies have examined the effect of internal demographic composition of population on economic growth. One such study is Oliver (2015) who determined the association between population composition and the shift in the structure of economic growth for the period ranging from 1975 to 2011. The outcomes illustrate that a rise in the aged cohort in the population pool, within the age range of 70 to 74 years old is associated to a decline in the GDP. According to Wongboonsin and Phiromswad (2017), cohort of senior population comprising those of over 65 years of age have a negative association with the economic growth.

Miri et al. (2019) also investigated the impact of age structure of the population on the Iranian development of their economy ranging between the years 1987 up to 2017. The authors discovered that the more elderly generation of the population aged over 64 years old possess a negative and significant long duration impact on the growth of the economy. They concluded that increasing the share of older than 64 years old group minimizes the marginal tendency to saving. This group form challenges for the formation of capital, which minimize the capital per capita, hence resulting in a negative impact on the development of the economy.

In contrast, several studies revealed that old-age dependency ratio has a positive effect on economic growth. Based on a research by Herzog (2011), it was revealed that there exists a positive correlation between economic growth and old-age dependency ratio. According to Herzog, this result is ascribed to a rise in consumption upon retirement by the aged, which offsets the loss in the preliminary productive capability that is realized by a reduced workforce. According to Fukuda and Morozumi (2004), by raising the working-age population saving rates, an increase in the elderly dependency rate have the possibility to boost the growth of the economy, provided that there are effective savings investment for domestic capital accumulation.

In another study by Li et al. (2012), they found that an ageing population has a beneficial effect on savings and investment, which in turn leads to increased economic development. They used data from the Chinese provincial panel data for the years 1985 to 2005 to make their discovery. According to Prettnner et al. (2013), an ageing population does not necessarily have the same negative impact on macroeconomic development in emerging nations as it does in rich ones. In other words, changes in the population age structure as a result of the shift toward population ageing may encourage more investment in human capital, which will have a beneficial effect on per capita growth. Workers have the chance to prolong their working lives as life expectancy rises, allowing them to further acquire relevant skills that may help them advance in their careers.

In Korea, Lee et al. (2017) found that elderly participation in the labour force has a positive influence on economic growth, which suggests that the harmful effect of ageing can be mitigated by more active participation of the elderly in the labour force in Korea for the period from 1960 to 2014. Huang et al. (2019), an ageing workforce has a significantly positive impact on the rate of economic growth in Taiwan using quarterly data from 1981–2017.

From the studies conducted by Li and Zhang (2015), in addition to studies done by Ruidong (2018), they revealed that in China, there is a positive impact of the dependency ratio on the GDP. This is possibly due to the growth rate of per capita GDP that is greater in comparison to the rate of growth of the aged in the overall population. Additionally, Mamun et al. (2020) discovered that in the long-term, there is a positive effect of the ageing population on the per capita real GDP in Bangladesh. This might be caused by the increase in capital formation that escalates the working age population's labour productivity and substitutes the reduction in the contribution of the ageing population in the economy.

In a study by Munir and Shahid (2020) on South Asian countries, they deduced that the rate of fertility and life expectancy possess a positive long-term effect on the economic growth of the South Asian countries. Concurrently, the economic growth is negatively affected by the increase in the dependency ratio. It was surmised in the study that South Asia's emerging economies are undergoing the intermediary phase, in which case they are experiencing a consistent decline in the rate of fertility, rise in life expectancy and a decline in dependency percentage. A rise in the working-age population implicates a rise in the supply of labour, and a decrease in the dependency ratio. A greater length in life expectancy results in extended working years for the people and adds towards efficient labour in the economic pursuits. On their own, the demographic factors have no capacity to boost the regional economic growth, instead, it is the demographic dividend, which is deserving for countries giving greater emphasis on productive labour, enhanced health amenities and controlled population.

3.4 Empirical Studies - Education Levels and Economic Growth

The attention of economists began to focus on human capital since the 1960s (Becker, 1964; Bowman, 1966; Denison, 1967; Schultz, 1961). Schultz (1961) reported that the

growth in human capital led to a great increase in American per capita income during the first half of the twentieth century. In the late 1960s, Denison (1967) revealed that two-thirds of growth is due to advances in educational attainment and knowledge in the economies of the United States and Western Europe.

The fast growth in East Asia economies has led to considerable attention on human capital and education. Economies, such as Singapore, Korea, Taiwan, and Hong Kong, have attained unmatched economic growth rates while making great investments in education. Education can contribute to economic growth through its impact on research expansion, enhancing knowledge, skills, technological progress, and productivity (Romer, 1989). Moreover, many studies have confirmed the importance of education in boosting human capital, which can be considered by many as the future necessary condition for development (Benhabib & Spiegel, 1994; Stevens & Weale, 2004). Wolff and Gittleman (1993) noted that education in developing countries is one of the best sectors for investment to boost economic growth and sustain poverty alleviation. Accordingly, investment in education is vital to produce a high quality and productive workforce that contributes towards economic growth.

The previous studies that examined the impact of education levels on economic growth revealed different findings. Cross-sectional studies began with Barro (1991) who reported that the growth rate of real GDP per capita was strongly correlated to human capital measured by the school enrolment ratio in 98 economies between 1960 and 1985. Thus, poor countries tend to catch up with rich countries if the poor countries have high human capital per person. According to Benhabib and Spiegel (1994), human capital was important to determine the per capita income growth in 78 countries for the period 1965 to 1985.

For primary education, Murphy et al. (1991) showed that primary education positively influenced growth in 91 countries from 1970 to 1985. Furthermore, in a study done by Barro (1996) in around 100 countries during 1960 to 1990, it was shown that primary education was an important factor to promote the growth rate. The study revealed that the public policy that is likely to be important for growth is the quality of education. In addition, Mankiw et al. (1992) reported that there was a significant relationship between secondary educated workers and growth in 121 nations from 1960 to 1985.

Panel data have become common due to the complete and available data. Agiomirgianakis et al. (2002) used panel data, which included 93 nations from 1960 to 1987. They reported that education had a statistically significant and favourable long-term impact on economic growth. The magnitude of this impact grows in importance as the degree of education (basic, secondary, and tertiary) rises in importance. According to the results, governments should encourage the growth of higher education in order to achieve greater economic development in their respective countries. This discovery may help to the understanding of the observed expansion of higher education as a critical element in economic development and sustained economic growth in many nations, which has been seen in recent years.

For secondary education, Benos and Karagiannis (2010) discovered that secondary education had a substantial effect on development in 51 Greek districts from 1981 to 2003. According to the findings of the research, more public expenditure on education and healthcare in all areas is required as a growth-enhancing strategy, as shown by the data. They felt that policymakers in Greece should take this into consideration when formulating policies at the national and regional levels. A similar result showing a robust correlation between economic growth and human capital that was measured by the secondary enrolment ratio was also found in 79 nations between 1960 and 2001 (Suri et

al., 2011). The results of this study implied that successful policy requires an early focus on human development, not only because of its direct impact but also because of its feedback effect on sustaining economic growth.

For tertiary education, according to Gyimah-Brempong et al. (2006), their study revealed that for the duration of years ranging from 1960 up to 2000, the per capita income growth in 34 African countries were substantially impacted by tertiary education. Findings of the study indicated a necessity for African countries to utilize higher educated human capital in their policies for growth. The researchers proposed that by taking into consideration the differences in the marginal impacts of higher and lower education levels on the human capital, it might be a necessity for the researchers to disaggregate education into varying levels for the purpose of ascertaining the real impacts of the levels of education on the economic growth. In developing countries, Sandar Kyaw and Macdonald (2009) disclosed that growth is substantially influenced by higher education. The outcomes illustrated that due to the adoption of sophisticated high-technology and notions, there might be a need for educated human capital with a more advance knowledge. Thus, a higher level of education has the capacity to match the requirements for higher-level skills needed to adopt new technologies.

Moving on, both secondary and tertiary education significantly affected economic growth in Arab countries from 1990 to 2010 (Awad et al., 2013). This study proposed that for the purpose of sustaining this positive and important effect of human capital towards the economic growth, the Arab countries must maintain its adoption of policies that result in knowledge and skills enhancement of their people. The policies comprise a rise in education spending at all levels, and the boost towards a rise in human capital investment by the private sectors.

According to a study conducted by Lutz et al. (2008), alongside Lee and Kim (2009), they revealed that the secondary and tertiary education were the core determining factors for the economic growth. It was discovered in the latter study that although secondary education and institutional education emerged as significant education levels in the lower income countries, a focus on technology and higher education give the impression that they are successful in creating growth for the upper-middle and high-income countries, however, not for the lower-middle and low-income countries.

Furthermore, Tsai et al. (2010) reported that the most important contributors to economic growth were secondary and tertiary education in 60 developed and developing countries between 1996 and 2006. It indicates that both developing and developed countries benefit from the dynamic nature of the knowledge economy. Advanced knowledge and skills currently are critical determinants of a country's economic growth.

Sterlacchini (2008) revealed that the educational attainment had a positive relationship with economic growth in European countries. He concluded that traditional public support for higher education should be tailored to the different features of the national and regional innovation systems and more focused upon the mechanisms that foster the economic exploitation of new ideas and the inter-relationships between local actors. In fact, the presence of weak linkages among government, universities and business firms could be one of the main reasons why, at present, some European regions are not able to reap substantial benefits from their efforts in the fields of R&D and higher education. According to Edrees (2016), human capital, as measured by the school enrolment ratio, showed a feedback relationship with economic growth in the Arab World for 1974 to 2013.

Time series data are the least usual kind of analysis. However, from a study by Shaihani et al. (2011), the influence of the levels of education on the economic growth in

Malaysia for the years ranging from 1978 up to 2007 was investigated through the employment of autoregressive distributed lag (ARDL) modelling. The researchers disclosed that secondary education has impacted the economic growth in positive way in the short-term. Concurrently, tertiary education has impacted the growth of the economy in the long-term duration. The outcomes proposed that more intensive concentration should be given to support the rate of enrolment at the tertiary education levels, and that the government should initiate policies that enable the inducement of innovative endeavours and products and encourage the enhancement of economic growth. Moreover, it is important for the government to offer greater employment prospects to balance with rising rate of enrolment in tertiary education. To attain an economy of high income, it is crucial to produce skilled workers with tertiary education levels.

In another study by Pegkas (2014), it gauged the prospective effect of the different educational levels on economic growth in Greece ranging over the years stretching from 1960 up to 2009. The outcome indicated the economic growth is positively impacted by secondary and tertiary education. Nevertheless, the economic growth was not impacted by primary education. He observed that in the short-term, the economy is not markedly impacted by primary education, nonetheless, it does have an indirect impact on the economy in the long-term run. Primary education forms the basis and foundation of education; thus, it is crucial for the other two in the next levels of education. In Pakistan Jalil and Idrees (2013) had executed an analysis on the effect of education levels on economic growth stretching over the years ranging from 1960 up to 2010. Based the findings, the economic growth of Pakistan is positive affected by all levels of education. All levels of education demonstrated positive and significant influential features and components implies that a country such as Pakistan, that possesses inadequate human capital social resources must allot all levels of education for the enhancement of the economic performance.

According to Heyneman (1997), the statistics on educational quality in the Middle East and North Africa indicate that the level of education is poor in these regions. Rather than a shortage of monetary resources, the issue is caused by inefficiency in the management of the resources that have already been allocated. He reported that the MENA countries should increase the level of educational quality by encouraging participation in higher education to achieve a prosperous economy. Akkari (2004) documented that the MENA countries must increase their investment in education as well as in economic sectors where the skills acquired through knowledge can promote more economic growth. He stated that the Middle East and North Africa nations must address several problems, including gender, regional, and socioeconomic disparities in schooling, illiteracy, poor links between education and economic development, community participation, and the role of private sector.

In a study by Deniz and Dogruel (2008), the researchers had assessed the correlation between the economic growth and education for both Turkey and the Middle East and North Africa (MENA) region. They concluded that the economic development in the MENA region is credited to the investments made in all levels of education. In addition, the assessment outcomes indicated that the primary schools' quality, and the secondary schools' education quality possess long-term impacts on the economic growth of Turkey. Furthermore, Amaghous and Ibourk (2013) conducted an analysis on the long-term association between education and economic growth in the MENA region. The researchers had utilized data for 15 countries which is segregated into two groups: middle income countries and high-income countries. The outcomes indicated that both the primary and secondary enrolment have positive impact on the economic growth in the middle-income nations. In the meantime, the economic growth of the high-income nations is positively impacted by higher education. They showed that even though certain

development is observed, there are still a lot to be carried out to guarantee education as a mega investment project.

In addition, Latif et al. (2011) revealed that long run relationship between primary, secondary, tertiary enrolment and economic growth does exist in Malaysia. The positive significant sign of tertiary enrolment and secondary enrolment in the long run demonstrate that these variables are very important for Malaysia's economic development. The finding shows an investment in human capital in Asian country since World War II has made great leaps in their standard of living. Lawanson (2017) examined the relationship between education and economic growth in Nigeria. The results revealed that the effects of primary enrolment rate and tertiary enrolment rate on economic development were positively significant. Secondary enrolment rate showed negative and insignificant effect on economic development in Nigeria. The study recommended appropriate channelling of the nation's capital expenditure on education to promote economic growth.

In Ethiopia, Gebrehiwot (2016) analysed the impact of human capital development on economic growth. The findings of the study indicated that there is a stable long run relationship between real GDP per capita and secondary school enrolment as a proxy for education human capital. The estimated long run and short run models indicated that education human capital has positive impact on real GDP per capita rise. Bayraktar-Sağlam (2016) used the average years of schooling in primary, secondary and tertiary education and revealed that the average years of schooling in secondary and tertiary education predict economic growth. That is, secondary and tertiary education enhance economic growth in the high-income OECD countries as well as in the developing countries. More importantly, the results indicated that advanced knowledge and skills, which are developed in the higher education stages, are critical determinants of a

country's economic growth. This means that tertiary education promotes economic growth by facilitating innovation, diffusion and adoption of new technologies.

For sub-Saharan African (SSA) countries, Ogundari and Awokuse (2018) was conducted to examine the impacts of primary, secondary, and tertiary levels enrolment ratios on the economic growth. The researchers indicated that the elasticity of education is positive in the Sub-Saharan African region. Particularly, the outcomes implied that a 10% rise in the enrolment of the primary, secondary, and tertiary schools would lead to approximately a 0.82 percent, 0.46 percent, and 0.01 percent rise in per capita GDP growth, respectively. Additionally, Kyophilavong et al. (2018) discovered the presence of a long-run correlation between all education levels and the growth of the economy. Through the use of the Granger causality test, they discovered that primary education, secondary education, and higher education is the Granger cause of economic growth. Simultaneously, in the long run, the economic growth is also a Granger causality from primary education, secondary education, and higher education. To summarize it all, the encouragement of, and support for education throughout the levels nurture growth, and concurrently, the economic growth equally aids educational progress.

Limited previous studies have addressed the gender effects of education levels on economic growth. One such study, however, is Barro (2001) who showed that the school attainment years at secondary and tertiary significantly affected economic growth in the case of males, while, for females, school attainment years insignificantly affected economic growth for around 100 countries from 1965 to 1995. This result suggests that highly educated women are not well utilized in the labour markets of many countries. A positive relationship between male schooling at higher levels and economic growth was discovered by Kalaitzidakis et al. (2001). Whereas there was a positive contribution to the economic growth by the females only at low levels of schooling. However, the impact

is negative from the females when they have undergone higher levels of schooling. It was implied that this might be associated to the probability that for female workers with higher educational levels in these countries might not be converted into the prospect of securing employment with higher salary. In addition, they have also discovered that for the males, they have a positive impact on growth at higher human capital levels. This is in line with the claim that impact of post primary education on the growth through the implementation of novel technologies.

Furthermore, Knowles et al. (2002) had created a neoclassical growth model comprising as its variables, the education of males and females. The outcomes revealed that labour productivity is substantially impacted by female education in seventy-three countries from the years ranging from 1960 to 1990. The findings are coherent and in line with the substantial long-term educational gender gap impact on the output for each worker, however, it has no extra impacts from either of the different levels of schooling. They concluded that the educational gender disparities are a hindrance to the economic development. Thus, the assertion by the World Bank claims that female education is significant is fitting.

For the South Asian countries, Siddiqui (2006) revealed that female education had a positive relation with growth, whereas male education had a negative relation with growth. The study also found that an improvement in human capital to the level of Southeast Asian economies would increase the average growth rate of 2.8% to almost 5.1% in the South Asian economies. In India, Self and Grabowski (2004) investigated the effect of education at the primary, secondary, and tertiary level on the income growth in India for the years ranging from 1966 up to 1996. From the correlation analysis, the outcomes revealed that for education, there is a positive correlation between education levels and growth, which demonstrates causality solely at the primary and secondary

level. The researchers made a conclusion that primary education is the primary causal force in the growth of the economy in India, and it is essential to be qualified, as subsequently the effect of education is prone to be observable only after an extensive period. In terms of gender, the results found that all levels of female education potentially contributed towards the growth of the economy, while the male's contribution to economic growth only appeared at the primary level.

Shalini et al. (2012) who investigated the relationships between economic development and human capital by gender and educational level in 62 countries from 1970 to 1999. According to the results, females with a high school as their highest level of education made a substantial contribution to economic development, accounting for about 3.35 percent of total economic growth. However, the findings also reveal that male secondary school graduates made a greater contribution to the development of their countries when compared to female secondary school graduates, with the formers' contribution to economic development accounting for approximately 5 percent of the total contribution. These findings provide credence to the notion that human capital is an essential component of economic development at all levels, and that it is this critical component that propels economic progress.

The research conducted by Tansel and Güngör (2012) showed that female education significantly influenced labour productivity in Turkey, whereas the male education insignificantly affected labour productivity. These results support the argument on the role of female education in development and growth, especially for the developing countries. The evidence also indicates that educational gender gaps are a brake on economic development. Therefore, the education of female workers as well as that of male workers should be given equal emphasis. According to a study conducted by Oztunc et al. (2015) on a selection of Asia Pacific countries, and they discovered that the increase

in the enrolment of girls in primary schools possess a positive and direct effect on the annual GDP per capita growth on the said countries. However, the annual GDP per capita growth is negatively impacted by the enrolment of females in the tertiary level of schooling. This offers verification that the female workforce composition in the selected Asia Pacific countries is inappropriate for individuals with education, and the female workforce is frequently exploited for jobs without qualifications. In addition, the inverse correlation between the enrolment of females in tertiary school and the economic growth shows that spending for high school education is expensive in the Asia Pacific region.

In Pakistan, Khan (2016) concluded that female human capital has positive and significant, while male human capital has positive but insignificant long run relationship with economic growth. It can be justified by female human capital's multivariate roles in a society compared to male human capital. He also suggested that social, economic and political empowerment of women is very important to make their role more effective in economic growth. If females are empowered to make their decision independently, they will be able to contribute more to social uplift of the society and the growth as well. In Greece, Pegkas and Tsamadias (2017) found no long run relationship between male and female tertiary education and economic growth while it was also found that both male and female tertiary education had an insignificant impact on economic growth in the short run.

Moreover, Orisadare et al. (2018) reported that male secondary education and female tertiary education positively influenced Nigeria's economic growth in both the short and the long run. However, female secondary education and male tertiary education negatively influenced economic growth in the short and long run. The result revealed that human capital development is yet to have an expected contribution to economic growth in Nigeria. This can be confirmed by the result of labour force participation rate which

shows a significant negative effect on economic growth both in short-run and long-run. The study suggested that human capital investment in education sector should be developed in order to produce quality manpower for sustainable development.

In a study by Singh et al. (2018) on Malaysia, the findings from their empirical analysis indicated that, in the short-term duration, tertiary education is very crucial for growth. Whereas both the primary, ensued by tertiary education were perceived to be stimulating aspects for growth in the long-term duration. A gender analysis indicated that male education appeared to be of greater significance for long-term growth in comparison to female education. At the same time, growth appeared to be impacted greatly and substantially by female education in comparison to male education in the short-term period. The recent study by Raifu (2019) revealed that female and male education achievements equally possess positive impact on the economic growth. Nevertheless, the economic growth is impacted to a greater degree by male education achievements in comparison to female education achievements. The study implied that emphasis on the advancement of the female and male citizens of Africa via the offering of quality education is significant for the governments in Africa. Extensive focus must specifically be placed on the education of the female citizens, who are still left behind their fellow male countrymen.

3.5 Empirical Studies - Female Labour Force Participation

There have been extensive studies conducted on the factors pertaining to the female labour force participation such as on fertility, education, joblessness, urban expansion, and economic growth, within the various economies. Amongst the developed and developing countries, the effect of these factors might vary. This section concentrates on the impacts of education and fertility towards the female labour force participation.

3.5.1 Education

The review on the impact of education on female labour force participation is contained in this section. One of the ultimate significant factors to expand in the female labour force participation is 'Education'. Hence, it is essential to comprehend the relationship between female education and the female labour force participation.

Many studies have shown that education has a positive effect on female labour force participation. One such study is Cerrutti (2000) who reviewed that education has a strong positive effect on the likelihood that a woman is in the labour force in Latin America. Those with college education are at least nine times more likely to be in the labour force compared with those having only a primary education or lower. The study also concluded that the main determinants of raising female labour force participation are improvement in their educational level, declining fertility, increased occupational opportunities, and postponement of marriage.

In a study carried out by Ejaz (2007), the key factors of female labour force participation in Pakistan was ascertained. The empirical outcomes implicated that age, educational achievement and marital status have substantially significant and positive impacts on female labour force participation. The outcomes implicated that for females in Pakistan, lessening the childcare encumbrances on females, and enabling educational achievement would result in greater rate of female workforce involvement. According to Esfahani and Shajari (2012), approximately sixty percent of the increase in the involvement of females in the labour force rate in Iran between the years ranging from 1986 up to 2006 can be credited to the decline in fertility, and the education expansion constitutes for approximately a third of the increase. As it is inconceivable for fertility to undergo further decline, female education could emerge as the key impetus in the continual increase of the involvement of women in the labour market.

From a study conducted by Al-Qudsi (1998), the determinants of the participation of Arab women in the labour force for a group of Arab countries were examined. The outcomes indicated a strong relationship between education and the involvement of Arab women in workforce. In addition, he made a conclusion that the education is a significant route to the successful involvement of Arab females in market initiatives. Additionally, a study on South Mediterranean countries was conducted by Tsani et al. (2013), they had examined the correlation between the involvement of females in the labour force and the economic growth. The findings indicated that changes in the involvement of females in the workforce participation resultant from the income growth and the reduction in the hindrances to the involvement of females in the labour force. The researchers also discovered the presence of a positive correlation between the involvement of females in the workforce and the education levels, which are, the primary, secondary, and tertiary levels.

Further to this, Tansel (2002) had conducted a study that examined the correlation between the participation of females in the labour force, and a gauge of the economic development level and other factors utilizing data derived from the 67 provinces of Turkey from the years 1980, 1985 and 1990. The results revealed the strong positive impact of female education on the participation of females in the labour force. Implications from the study indicated that there should be an increase in the education levels of females contained as the focus in the policies. This in turn will enhance the participation rates of females in the labour force. According to Mammen and Paxson (2000), education levels of females, and their husbands' education levels seem to be crucial determinants of the labour market initiatives for females.

As for Turkey, Palaz et al. (2006) who examined a series of unit root and cointegration test to ascertain the effect of varying education levels on the workforce involvement in

Turkey throughout the years 1960 up to 2000. The disaggregation by gender on the educational variables was executed to examine the impact of the education of females and males at each category on the involvement in the labour force. The key inference derived from this study is that education possesses a significant impact on the involvement rates of males and females at every level of educational achievement in the labour force. Additionally, it is equally noted that the most extensive impact on the involvement in the workforce comes from females who possess secondary and university level of education. The outcomes indicated that possession of education accomplishments enhance the involvement of females in the workforce. Based on a research by Ince (2010), the participation rate of females in the labour force is substantially impacted by tertiary education, whereas primary and secondary education possess the reverse impact. This signifies that, in cases of the rise in the educational level of females, it shows that they began to acquire a greater participation rate in the labour force. The rise in the number of enrolments in schools possesses a favourable effect on the participation of females in the labour force.

Similarly, Chamlou et al. (2011) had conducted an empirical analysis on the investigation of the effect of education on the involvement of the females in the labour force in Amman, Jordan, which acts as a proxy for the Middle East and North Africa region. The analysis indicated that the involvement of females in the labour force is positively and greatly affected by higher education, while it is not impacted by education level at the secondary level and below. The outcomes indicated that for the enhancement of economic prospects of women with secondary education achievements impacting the majority of working age women, policies and the mobilization of initiatives are required. Likewise, a comparable outcome indicated that solely at the highest levels of education is there a substantive indication to attract higher number of women into the workforce at appealing job and salary provisions (Klasen & Pieters, 2012). In South Africa, Ntuli and

Wittenberg (2013) showed that the attainment of higher education was related with heightened involvement of females in the labour force traversing the years between 1995 up to 2004.

In Chile, Contreras et al. (2005) suggested that a rise in education was associated with a heightened involvement rate of females in the labour force between the years 1957 and 1997. Furthermore, Shin and Moon (2006) stated that the prospects of involvement are substantially and positively impacted by the education level. It appears that greater education prepares females with more superior qualification and provides enhanced prospects in the labour market, enabling them to be enlisted in the labour market. According to Evans and Kelley (2008), rising educational attainment and falling fertility lead to increased tremendously of women's workforce participation in Australia in the 1980s and 1990s.

A study carried out by Olowa and Adeoti (2014) noted that the participation of women in the labour market rises with the rise in educational levels in rural Nigeria. The rise is by 22% with primary education level, 31% for secondary education level and 45% for tertiary education level. This signifies that the heightened prospects of the participation of females in the labour market is associated with higher level of education that they possess. A study conducted recently by Tasseven (2017) had engaged in the analysis of determinants pertaining to the involvement of females in the labour force for the Group of Eight-G8 countries ranging between the years 1995 and 2013. The outcomes indicated that educational accomplishment impacts on the involvement of females in the labour force in a positive and significant manner.

Conversely, alternative studies have reported a negative correlation between the engagement of females in the workforce and education. As an exemplar, in a study conducted by Das and Desai (2003), they discovered that education is related to a reduced

number of engagement of women in India in the labour force. The outcomes validate the claims that for the women in India, education is considerably scarcer in comparison to men; hence, women who are educated are prone to originate from higher class strata in society and will tie the nuptial knot with husbands earning higher income. Thus, educated women possess more superior family resources enabling them to remain out of the workforce. Likewise, a study by Dasgupta and Goldar (2005) disclosed that the level of education is contrariwise to the females' decision to be involved in the workforce in the countryside in India. Additional to this, in a study on Brazil by Lam and Duryea (1999), it was shown that there is a feeble relationship between the reduction in fertility and rise in the involvement of females in the workforce possessing low educational levels.

Through a study conducted by Aboohamidi and Chidmi (2013) on Pakistan and certain MENA countries over the years ranging from 1990 up to 2008, they had carried out an analysis on the determinants of the engagement of females in the workforce. The researchers discovered that the involvement of females in the labour market is negatively impacted by their achievement of secondary education and tertiary education levels. From the study, it was surmised that the prospects presented by the labour market for women do not require them to possess higher technical skills. There have been numerous occasions that families guide their daughters towards jobs where education is needless. Moreover, based on a study by Verme et al. (2016), they had examined the aspects that impact on the engagement of females in the workforce in Morocco. The researchers discovered that secondary education levels result in lower involvement of females in the workforce. The outcome was verified by the short-term model for both the urban and countryside regions and may be explicated based on the inferior execution of strategic sectors for the hiring of women like in the manufacturing and services sectors.

Certain studies discovered that the involvement of females in the workforce is impacted by education that is observed to be deteriorating. Based on a study by Hotchkiss (2006), the prime contributor to the involvement rate in the workforce had deteriorated between the years 2000 up to 2005, and the deterioration was attributed to the lower attraction of education into the workforce. In another study conducted on Europe, Vlasblom and Schippers (2004) indicated that it is not possible to explicate the rises in the rate of involvement by neither in the changes in the level of education, nor can it be attributed to the total number of children and the timing of the children. The supply of females into labour market increases at all levels of education for women, regardless of having children or otherwise. They have also deduced that it is essentially the changes in attitude that propel the growth in the rates of involvement over the last tens of years.

In a study in urban India by Klasen and Pieters (2015), they documented that even though there is increasing growth, a deterioration in the fertility, and increasing salary and education levels, all of these did not result in an increased in female engagement in the labour force between the years 1987 up to 2011. Additionally, they also showed that a consolidation of supply and demand side effects seem to be causal for this decrease in the involvement of females in the workforce, inclusive of increasing male incomes and education, alongside changes in the employment sectoral structure.

In a study conducted by Dayioglu and Kirdar (2011) in Turkey, in which the rate of involvement by females in the workforce is the least as compared to the Organization of Economic Cooperation and Development (OECD) countries, and proved that the involvement of women is fewer in the workforce regardless of the rise in the educational accomplishments and deteriorating fertility rates. Through the utilization of a synthetic cohort analysis, the possibility of involvement by the females in the workforce possessing primary education and was born prior to and ensuing 1960 indicates the absence of

significant differences. Nevertheless, the engagement rate for women possessing high school education and higher education is lesser for the younger groups.

Subsequently, there have been a few studies that have examined the effect of education on fertility. As an exemplar, according to a study by Leon (2004), the outcomes showed that an extra three years spent in schooling will lead to one less child for every woman on average. The implications of the outcomes indicated that the increase in the levels of education result in a substantial portion of the decrease in fertility rates for a number of Western countries in the 2nd half of the Twentieth century. In addition, Black et al. (2008) proved that expanded compulsory schooling actually decrease the occurrence of teenage pregnancy in both the United States of America and Norway. The outcomes implied that the laws in place were targeted at enhancing the educational results might have impacted the decision-making of teenagers regarding fertility. Conversely, in a study by Monstad et al. (2008), no substantive proof was discovered that greater education results possessed by a greater number of women maintaining to be without any child, or bearing lesser number of children.

Several studies have been carried out in developing countries that investigated how fertility is impacted by education, for example, studies carried out by Breierova and Duflo (2004), Osili and Long (2008), Chicoine (2012) and Duflo et al. (2015), among others. In all of the respective studies, negative correlations were discovered between female education and fertility. Furthermore, a study done recently by Ali and Gurm (2018) indicated that female education substantially decreases the number of children given birth to be each individual woman. The aforementioned researchers also offered proof that female education in Egypt does not enhance the involvement of women in the labour force.

A study by Boccanfuso et al. (2015) in Senegal involved the investigation on the manner in which the enhancements on quality at the university level impacted employment. The outcomes implied that young highly skilled employees acquired a 9% -point employment advantage in comparison to older workers. The researchers also discovered that young employees are more equipped in securing employments in the services sector and in government, which are apparently related with better rewards to education. In a study by Shi and Xing (2010) on China, they indicated that educational progress is not responsible in increasing the involvement in the workforce participation in the short-term.

Moreover, a study by Li et al. (2014) showed that education expansion intensifies the female unemployment rate by 7 percentage points. This increases queries for the conduct of forthcoming additional research, particularly within the framework of a country with small or sluggish female involvement in the labour force. There are possibilities that young female graduates have to pull out from the workforce because of the dearth in job prospects due to the rise in competition between fellow females possessing higher education qualifications even though educational accomplishments have increased.

The ambiguity of the effect of education expansion on female labour force participation raised in this section can be examined using the case of Middle East. Pertaining to the participation rate of females in the labour force, another factor that has been studied in literature is fertility rate, with several studies perceiving fertility to be the core determinant to cause such a rate. The ensuing section involves reviews pertaining to the impact of fertility on the participation of females in the labour force.

3.5.2 Fertility

Numerous studies revealed that fertility is another significant and crucial determinant of the participation of females in the labour force. This section involves the reviews

concerning the empirical studies pertaining to developed and developing countries that assess the correlation between fertility and the female labour force participation. In the literature, it is revealed that the participation of females in the labour force is negatively impacted by fertility. A study by Bloom et al. (2009) is an example of such a study that utilized a panel of 97 countries traversing over the years ranging the years 1960 up to 2000 to study the impact of fertility on the participation of females in the labour force during their productive years. The researchers indicated that the participation of females in the labour force is negatively impacted and statistically significant between the age range of 20 to 44 years old. In a study by Shin and Moon (2006), they had utilized young females panel data to examine the correlation between participation in the labour force and fertility. Based on their study outcomes, fertility is a condition that is a significant hindrance for the engagement of females in the labour force.

Likewise, Hartani et al. (2015) had conducted a study to examine the correlation between the involvement of females in the labour force and the total fertility rate of females for the ASEAN-6 countries traversing the duration of years ranging from 1995 up to 2013. The panel causality outcomes implied that there exists causality run from the female total fertility rate to the involvement of females in the labour force. The outcomes also implicated that there is a contradictory correlation between the involvement of females in the labour force and the female total fertility rate. Additionally, Chapman (2015) had conducted an analysis on the correlation between the expansion of the economy and the engagement of females in the labour force in the Middle Eastern countries and North Africa (MENA) by utilizing a regional panel data set of 20 countries for the years ranging from 1990 up to 2012. According to the outcomes, the rates of fertility are revealed to have negatively impacted the engagement of females in the labour force.

From their study in urban India, Klasen and Pieters (2015) proved that there was a rising negative correlation between fertility and the involvement of the females in the labour force ranging from the years 1987 up to 2011. In their study on Cameroon, Forgha and Mbella (2016), they revealed that the rate of fertility impacts negatively on the female labour supply. An increase in the rate of fertility rate will decrease the supply of female labour by 0.237%. The researchers advocated that greater endeavours be executed in decreasing the rate of fertility rate in the country via education as this will enhance the engagement of females in the labour force, as observed from the human capital theory. From a study conducted recently by Altuzarra et al. (2019), the outcomes reveal that in the 13 countries of the European Union, the rate of fertility possesses a negative relationship with the involvement of females in the labour force.

Conversely, certain studies implicated that in certain European countries, there are indications of transitions to a positive correlation between fertility and the involvement of females in the labour force participation. As an exemplar, in their study, Ahn and Mira (2002) discovered that during the 1970's and up to the early 1980's, the correlation between total fertility rates and female participation rates traversing developed countries was negative, substantial and quite constant with a value of approximately 0.5. Nevertheless, by the terminal end of 1980's the correlation was correspondingly substantial but positive 0.5, with merely little differences that happened during the initial half of the 1990's.

In a research by Rindfuss et al. (2003), the research recorded a drastic difference in the correlation between the levels of fertility and the levels of involvement by women in the workforce. Up to the 1980s, this correlation had exhibited strong negative relationship. Nevertheless, throughout the 1980s it developed into a positive relationship, and as of 1990 the relationship became extremely positive. The researchers contended that the

changes in the relationship indicate the reactions at the community level, in certain situations, have alleviated the discordancy between the roles of being a mother and an employee, and weakened the connection between marriage and childbearing.

Likewise, based on a study by Boca and Locatelli (2006) in a number of OECD countries in the 1970s, they noted a negative correlation between fertility and involvement of females in the workforce. Nevertheless, at the terminal end of the 1980s, the correlation between the fertility and the involvement of females in the workforce develops into a positive relationship. The transformation could be elucidated by the differences in working mothers' welfare state support that had led to the decrease in the discordancy between motherhood and livelihoods, through the provision of policies which both boost employment flexibility (for example part-time prospects) and decrease the children's expenditure prospects (child benefits, parental leave, and subsidized childcare).

In a study by Adsera (2004) it was conveyed that throughout the past twenty years, quiet changes in the demography with vital economic and political significances have occurred. Firstly, there has been an acute plunge in the fertility rates in many developed countries to levels beneath the replacement rates. Secondly, the relationship between fertility and the involvement rates in the labour market by females throughout the OECD countries has developed into a positive impact. Nevertheless, Kögel (2004) had disputed this outcome and contended that the time-series relationship between fertility and the employment of females does not establish a transformation marker in the OECD countries ranging through the years 1960 up to 2000.

Certain recent studies have verified the positive correlation between fertility and the involvement of females in the workforce in the OECD countries. As an exemplar, the study conducted by Taşseven et al. (2016) discovered that rate of fertility has positively impacted the engagement of females in the workforce in the OECD countries. A research

conducted by Choudhry and Elhorst (2018) revealed that fertility possesses a negative impact on the engagement rate of females in the workforce in low-income economies, however it possesses a positive impact in high-income economies. Nevertheless, this positive impact is solely important for women who are within the age range of 15 years old and 19 years old, or 20 years old to 24 years old. This it is elucidated by the given that in circumstances of a lengthier-term duration comparatively more women continue to be engaged if they get to the older age cohorts.

A comparable finding by Shittu and Abdullah (2019) surmised that in the ASEAN-7 countries ranging from the years between 1990 up to 2015, there exist both negative and positive correlation between fertility and engagement in the labour force, with causality running from labour force engagement through fertility. Several studies have been conducted on the analysis of the determinants pertaining to the engagement of females in the labour force, inclusive of fertility and other variables, in various types of economies and collectives of economies. As an exemplar, based on a study by Cerrutti (2000), and Lee and Cho (2005), the researchers stated the core determinants of increasing the engagement of females in the labour force are advancement in the educational level of females, the reduction in fertility, improved occupational prospects, and deferment of marriage. In a similar study, Ejaz (2007) discovered that there are specific factors which substantially and positively impacted on the engagement of females in the labour force in Pakistan, which encompass age, educational achievement, and conjugal status. Furthermore, a study conducted by Verme et al. (2016) informed that the low engagement of females in the labour force was because of marriage, secondary education completion and the GDP per capita.

According to a study by Mishra and Smyth (2010), they had dedicated their study to the examination of the correlation between the engagement rates of females in the labour

force and the total fertility rate among the twenty-eight OECD countries. They discovered a substantial and important inverse correlation between the two variables. Likewise, based on study done in Spain by Rica and Ferrero (2003), their study indicated that the engagement of females in the labour market is negatively impacted by fertility, particularly for the educated females. On a study conducted by Vallanti et al. (2012) on the European Union countries, their findings revealed the engagement of women in the workforce is caused by the deteriorating negative impact of the fertility choices, with significant variations throughout the European Union countries, typified by the varying institutional and welfare scenarios.

Hartani et al. (2015) had conducted a study that examined the correlation between the engagement of females in the labour force and the total fertility rate (TFR) of females for the ASEAN-6 countries (Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam), and discovered that rising rate of fertility rate led to a low participation rate of females in the labour market. Additionally, in a study on India by Sanghi et al. (2015) revealed that the impetus towards the engagement of women in the labour market is attributed to the deteriorating fertility rate and the child dependency ratio. Furthermore, based on a study conducted by Kumari (2018) recently had ascertained that the demographic factors underlying the low engagement for females are marriage, fertility, childcare and migration.

There have been several studies conducted on the Middle Eastern countries that were devoted specifically to investigate the impact of fertility on the engagement of females in the labour force. As an exemplar, in a study by Al-Qudsi (1998) on Arab women in a collective of Arab countries, the factors of their engagement in the labour market was investigated. The outcomes revealed the inverse correlations between the engagement of Arab women in the workforce and fertility, and this type of relationship is obvious in the

entire Arab countries being reviewed. Al-Qudsi also surmised that an increase in the salary enhances the prospects of expenditure of childbearing, and hence results in a reduction in fertility. In a study on Iran by Mahmoudian (2006), it was forwarded that the reduced engagement of Iranian women in the workforce is significantly correlated to the heightened fertility rate. In a research on Turkey by Dayıođlu and Kırdar (2010), they revealed the implication of the heightened engagement rate of younger women is caused by the reduced rates of fertility in the younger collectives of women, alongside the negative relationship between having children and the engagement of women in the labour market.

Based on a study by Esfahani and Shajari (2012) in Iran, it was disclosed that the tendency of the heightened engagement rate of females in the labour force can be associated to the decline in rate of fertility, and the development of education ranging from the years 1986 up to 2006. Additionally, in a study by Tsani et al. (2013), they discovered that there exist a negative association between fertility and the participation of females in the workforce. Likewise, in a study by Aboohamidi and Chidmi (2013) on Pakistan, certain Middle Eastern countries and North Africa (MENA) countries, the researchers had conducted an analysis on the factors that determine the engagement of females in the workforce ranging from the years between 1990 up to 2008. According to the outcomes of their studies, the engagement of females in the workforce is impacted in a negative manner by the fertility rate.

Based on a study carried out by Hendy (2015) in Egypt, the causality for the small number of women participating in the country's labour market was deliberated. The outcomes indicated that marriage, childbearing and obligations to the family partly explicates the small number of females engaged in the workforce. In another study conducted by S. Mansour (2018) on Oman, it was disclosed that the Omani women are

faced with substantial problems with regards to care of their children/child which impacted on the rates of expanding their engagement in the workforce. He advocated to the adherence of certain specific procedural matters so as to boost the Omani working mothers' employment, and chiefly the formation of more reasonably priced childcare amenities.

There have been a few research that concentrates on the effect of childbearing and having children on the engagement of the mothers in the workforce. Additionally, through the study by Miller and Xiao (1999), it was conveyed that how many children there are in a family has a negative impact on the engagement of mothers in the workforce. Meanwhile, the older the age of the children will have a positive impact on the engagement of mothers in the workforce. A comparable outcome on a study in the Sub-Saharan Africa region that is the same which was conducted by Nchake and Koatsa (2017) indicated that the number of children that a woman has impacts in a negative manner in their engagement in the workforce. In a research conducted by Assaad and Zouari (2003) on Morocco, had involved an analysis on the correlation between fertility, the phasing of marriage, and the engagement of females in the workforce. The outcomes showed that marriage by itself will not have a substantial impact on the reduction in female engagement. However, the reduction in female engagement is affected by women having children as an unavoidable subsequent product of marriage which led to a lesser rate of participation in females.

Based on a study by Moschion (2013) on Australia, the research findings indicated that the consequences of having greater than one child will reduce the engagement in the workforce by 12 percentage points, and will reduce the hours worked by approximately four hours for each week. The consequences of having greater than two children reduces the engagement in workforce by 12 percentage points and will affect the hours worked

by three hours for each week. On a study by Karbownik and Myck (2016) that utilizes data from Poland, the impact of the size of the family on the supply of the females in the labour market was assessed. The outcomes validated the negative impact of having an extra child towards the employment of females by approximately 7 percent, derived from the sampling of mothers with at the minimum of one child.

According to a study by Lee and Lee (2014) on the situations in Japan, the findings from the study discovered that the offering of childcare services impacted the fertility of females aged 20-29 in the labour force in a favourable and significant manner. In the long-term duration, there is absence of substantive proof that the engagement in the workforce dissuades women of the ages ranging between 20 up to 29 years old of having children. Additionally, no proof was found that connects having children impedes being employed again, in addition to the unceasing employment among the women who are aged between 30 years old up to 44 years old.

Based on a study on the situation in Turkey by Atasoy (2017), the deciding factor of the involvement of females in the services sector was found to be impacted in a negative manner by how many children they have. In other words, the possibility of being involved in services sector work will be decreased by 2.5% due to having another child under 5 years old. In another study by Mahmud and Bidisha (2018) on the situation in Bangladesh, it was observed that the deciding factor for engagement is impacted by taking into consideration the age of the child due to the fact that younger children need greater care. Hence, this factor will dissuade a woman to be involved. Based on the outcomes, having younger children below 6 years old presents a deterrent towards the involvement of females in the workforce. Having children below the age of 6 years old decreases the engagement of females in the workforce by approximately 3.6%.

In brief, there could be differences in how the participation of females in the workforce is impacted by fertility because of the differences in the expenditure of having children in addition to accessibility of family-oriented policies amongst countries that are liable to impact on decision-makings related to work. The diversity amongst the education levels of women, the standard of living and status or the age of mothers are liable to impact on the decision-making pertaining to the participation of women in the workforce.

3.6 Research Gap

This section focuses on summarizing the gaps discovered in the literature reviewed. These gaps are addressed in this thesis.

3.6.1 Research Gap – Objective 1

Even though, empirical research on effects of changes in age structure on economic growth has received sufficient consideration in the developing countries, not much critical attention has been given to the age structure in the Middle East countries. In addition, previous studies on the demographic–economic relationship in developing countries context have concentrated solely on the changes in the dependency ratios and the population growth, disregarding the fundamental demographic factors of population dynamics; the crucial element which is the changes in the age composition. According to Ahmad and Khan (2019), there are various aspects and avenues for further research to explore the role of demographic change and human capital in economic growth. The empirical analysis may be conducted for developing countries' disaggregated samples by regions and extended further by using the age, sex and distribution details of age structure and human capital as in most of the economies young cohorts are better and more productive than comparatively old ones.

Through the literature, we noted that most empirical studies were based on using aggregate working-age population ages from 15 to 64 as measures of demographic change

without consideration of the different groups of age within the working-age population. Therefore, this study classified the working-age population into three age groups: young workers (15–24 years), middle-aged workers (25–44 years), and senior workers (45–64 years), which are also disaggregated by gender (male and female). To the best of our knowledge, this is the first known study in the Middle East using the share of working age population by age and gender as measures of demographic change.

The key motivation for this disaggregation is to ascertain the role of each age group and its effect on economic growth where the young cohorts are better and more productive than comparatively old ones. In addition, the aim of the classification of the working-age population is to explore the most significant changes that have occurred in the Middle East in terms of working-age population by age and gender and to explain the most important possible impacts of these changes on economic growth. In order to prepare countries to gain demographic dividends, it is important to explore and know the changes in age groups that have a potential impact on the economic growth of countries. In the Middle East where the working-age population is a dominant demographic force in all countries, the study of working-age populations in the different age groups is a very delicate process to access the demographic strength of the region. So, an age-group study for the working-age population has been made to get a concrete picture of the workforce of the Middle East and their contribution to the economy.

3.6.2 Research Gap – Objective 2

The impact of population ageing on economic growth has been extensively studied, particularly in developed countries, and the Middle Eastern countries may take advantage and gain knowledge from what these countries have undergone based on the findings. In so doing, Middle East nations may create the optimal prospective resolution towards an

inevitable situation, guaranteeing the sustainability of economic growth and maintaining the quality of life of the population.

Moreover, existing empirical studies on the effect of population ageing on economic growth provide mostly negative effects, with some studies providing no significant effect at all, while some others revealing positive effects on economic growth. Also, although a large number of empirical studies have examined the impact of population ageing on economic growth, very few studies were undertaken in the Middle East. The United Nations (2009) reported the urgency for the execution of empirical studies pertaining to ageing and economic growth in the developing countries, urging further consideration and focus from researchers.

Furthermore, several limitations have been discovered from the reviewed literature about the effect of population ageing on economic growth. Most of the existing studies in ageing adopted only old-age dependency ratio despite the several other notable alternative measures of population ageing. Thus, two proxies for population ageing are used in this study, namely population aged 65 and over and old dependency ratio to investigate their impacts on economic growth. Moreover, it is observed that the empirical results vary from one country to another, thus making the subject more interesting to study. Therefore, it is increasingly important to select appropriate models and estimation methods in order to examine this relationship. In addition to that, as most empirical studies concentrated on an individual country basis, this study addressed the impact of population ageing on economic growth on panel data analysis of ten selected Middle East countries. Therefore, this study is an attempt to fill the literature gap regarding this demographic phenomenon in the Middle East.

3.6.3 Research Gap – Objectives 3 and 4

According to Gyimah-Brempong et al. (2006), together with Jalil and Idrees (2013), it may be necessary for researchers to disaggregate education into different levels in order to be able to identify the true effects of different levels of education on economic growth as well as to provide better guidance to policy makers since it can be indicative of the level of education that needs emphasis in policy formulation. In addition, in Khan (2016), regional disparities were highlighted to prevail in developing societies, one of which is the role of female human capital in economic growth, which can be extended to the regional level. The reason for this lies in the identification of regions where female human resource is not contributing much towards the social and economic uplift of the region.

With demographic change based on ageing, countries need to revise their education policies to meet labour market needs and promote economic growth. Diversification of the economy will need workers with higher- and multiple-skills. Although education and its influence on the economic growth has long been the focus of major concern, very few studies focused on Middle East countries. Most studies were also carried out at the aggregate levels of education without much consideration of the relative effects of male and female education. Therefore, it will be interesting to investigate the gender effects of education at primary, secondary, and tertiary level on economic growth in the Middle East countries.

Overall, the econometric analysis in most Middle East studies is appropriate for having a first look at data, but not for drawing definitive conclusions. Furthermore, the results are varied from one country to another and the relationship between education levels and economic growth remains unclear in the previous Middle East studies. This work differs from others in the sense that it uses recent data and the most appropriate panel data

techniques. In further analysis, statistical diagnostics play an important role in identifying the validity of the results of estimations and in achieving reliable methods.

To summarise, this study focuses on the effect of various levels of education on economic growth since it is believed to be more fruitful for policymakers from the viewpoint of public spending. In fact, the findings of the research may be regarded as a helpful input in the formulation of successful budget plans in which resources can be channelled effectively to achieve desired outcomes. In addition, the research has gone one step further by examining the effect of education on economic growth in terms of both males and females. Even though female enrolment in educational levels has risen, this has not been reflected in the present makeup of the Middle East's labour force. According to the World Bank, women represent 48 percent of the working-age population in the Middle East in 2018, but just 20 percent of the labour force. Due to the fact that previous studies examining the effect of education by gender have been very restricted in the Middle East, it will be fascinating to discover if it is the education of men or females that makes a major contribution to economic growth. This study may also be useful to politicians in realigning their budget approach toward the segments that are more effective in creating growth.

3.6.4 Research Gap – Objective 5

The reviewed literature confirmed that past studies show inconclusive evidence about the factors affecting female labour force participation in the Middle East. Moreover, they revealed unclear relationship between educational attainment and female labour force participation. Therefore, in the context of low rate of female labour force participation in the Middle East, the panel data analysis of factors affecting female labour force participation is an interesting research agenda for Middle East countries. The main motivation for pursuing this research is the region's recent concern about its decreasing

female labour force participation, which is currently lower in comparison to all world regions.

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CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

The theoretical framework for this study utilizes the neoclassical growth theory, which substantiate that human capital is the core driver of economic growth, on the condition that individuals invest in the education sector to accrue new skills and knowledge. The empirical models will set forth to investigate two significant connections for Middle Eastern nations: firstly, the relationship between the demographic change and economic growth, and secondly, the correlation between human capital and economic growth. Extensions of the models are utilized to proceed further than the quantitative indicators of demographic change to take into consideration the working age population according to age and gender. Further extensions of the education model comprise the gender effects of diverse education levels on economic growth. Consequently, this study will investigate the models to determine the part played by each age group, and its influence on the economic growth. The further understanding of the connections between the working-age population, their education levels and economic development, is crucial in sustaining the economic growth of the Middle East in the long-term duration.

Accordingly, conceptual and theoretical framework will be explicated in this chapter. It will explain about the methodology, data sources and definitions of variables which will be utilized in this research. Section 4.2 presents the conceptual framework. Section 4.3 explains the estimation method in addition to describing the econometric models. The models will be developed according to the fundamental theories. Lastly, section 4.4 holds the description on the data sources and the variables definitions.

4.2 Conceptual Framework

After a thorough review of the empirical literature, this thesis came up with the conceptual framework providing the direction of the study. This was presented in Figure 4.1.

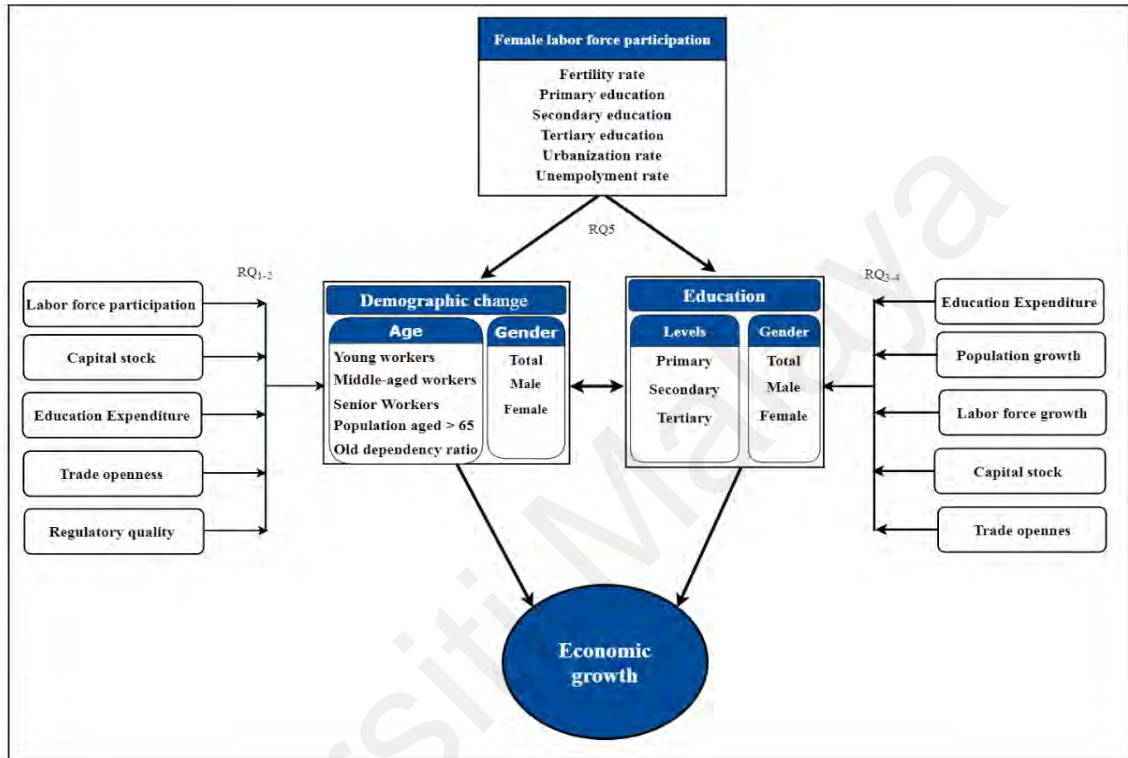


Figure 4.1: Conceptual framework

Source: Author

The Figure 4.1 explained that the study is based on three econometric models that comprise its core subjects. Firstly, the study uses changes in the composition of working age population and old-age dependency ratio as measures of demographic change. It consists of two parts, the first part will investigate the relationship between economic growth and working-age population by age and gender in the Middle East countries, the second part for examining the relationship between population ageing and economic growth. There are two proxies for population ageing are used namely population aged 65 and over and old-age dependency ratio. Secondly, the study examines the effect of different levels of education namely primary, secondary, and tertiary on economic growth, and to examine whether the effect at all levels of education differs according to

gender in the Middle East countries. Thirdly, the subject aims to analyse the impact of education and fertility on female labour force participation in the Middle East countries.

4.3 Methodology

The methodology employed is founded on the quantitative approach, using the Middle East countries' data for the years ranging from 1996-2018 in an analysis. It will be augmented by tables and graphs linked with the analysis of the study. This quantitative approach depends on a few important explanatory variables that have the possibility to impact the principal study topics. Thus, a specific model will be formed for individual chapters, for the purpose of interpreting the attained outcomes and associate it with the analytical approach. This section will describe the method used for estimation, and the econometric models that will be employed in this study.

4.3.1 Research Design: Quantitative Research Technique

The positivist promoted the quantitative research design with the intensive use of numerical data; hence, it is a confirmatory research design. As noted of its numeracy, it provided proximate chances to confirm accuracy of the existing theories (Chua, 2012; Creswell, 2014). The philosophy behind the quantitative research emerged from the notion that there is relative objectivity in the knowledge of the population under study (Creswell, 2014; Soiferman, 2010). It assists to assume the changes that take place within the society rather than looking at the individual changes (Chua, 2012; Soiferman, 2010). So, the researcher would have theoretical background to select sample, use the scientific method of sampling, formulate a hypothesis, generalized and draw inferences about the target population (Hanson et al., 2005; Soiferman, 2010). In a nutshell, quantitative research possesses the characteristics of confirmatory research design.

From the preceding arguments on quantitative research design, the quantitative approach suggests the cause-effect analysis with the use of extensive data, using the

deductive research criterion, and generalizes the result back to the population to confirm the theory. In this thesis, the research objectives are tailored to the quantitative approach. The quantitative research design is justified because we have prior knowledge of the population (Middle East) characteristics (Bhattacharjee, 2012). Also, sufficient data were available. In other words, the current study followed Harrison and Reilly (2011), Small (2011) and Creswell (2014) on the selecting positivists approach of quantitative research design.

4.3.2 Research Flow Chart

The quantitative research design is presented as a flow chart in Figure 4.2 regarding the research procedure undertaken in this thesis.

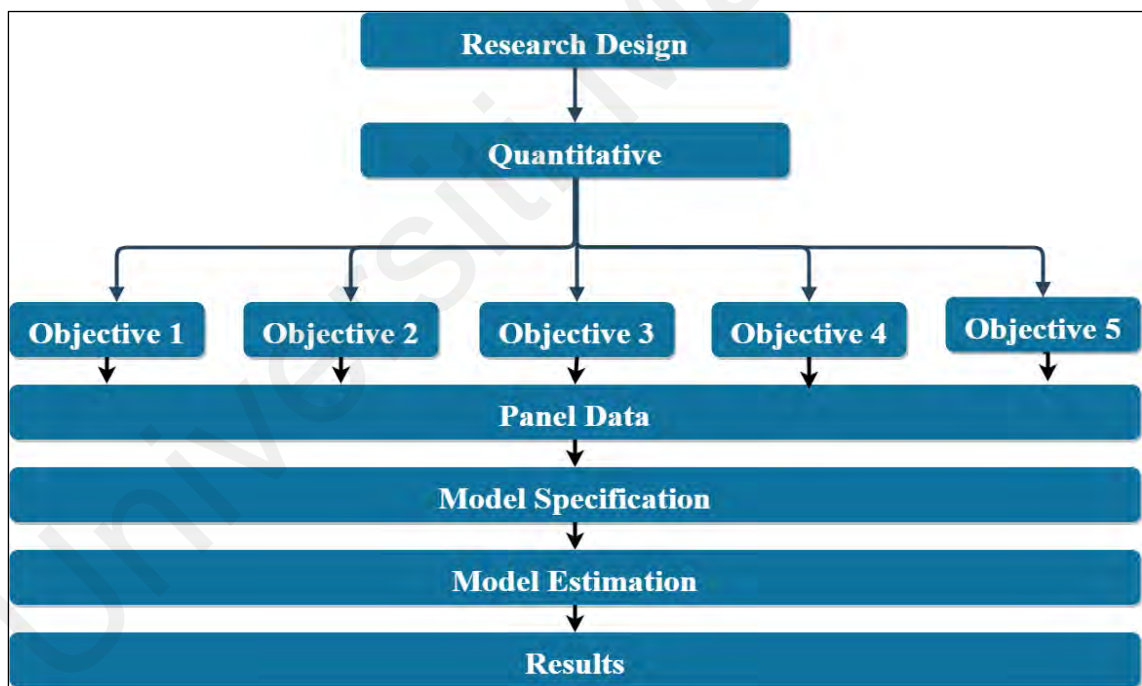


Figure 4.2: Research flow chart

4.3.3 Research Data

The research data in this current study involves the 'Panel data', termed as the longitudinal data or cross-sectional time series data in certain distinct cases. It is data which is obtained from several observations over a period of time on a quantity of cross-sectional units such as individuals, households, companies, or governments. The panel

data contain certain benefits in comparison to cross sectional data and time series data. The time series and cross section mutually took into account only one dimension: time and individual, accordingly. Nevertheless, panel data takes into account both dimensions; time and individual that offers “greater informative data, more variability, fewer co-linearity among variables, greater degrees of freedom, and greater efficiency” (Gujarati, 1995). Additional benefit of employing panel data is that it enables for a copious econometric analysis accounting for country specific influences and examining a correlation across more entities over different points in time (Stock and Watson (2011).

Taking together from the previous argument on various research data holds four basic things for this research thesis. Firstly, data should be selected carefully from the different data type. Secondly, the nature of the research problem and questions help us to choose among the different data type. Thirdly, from the mode of the research design, panel data was selected to analyse research questions of this thesis. Fourthly, this thesis embarked on the study of panel data analysis. There are only limited annual data are available for individual countries. For reliable estimates, these data need to be pooled or combined and therefore, panel data analysis is the most appropriate estimation method to be used. Summarily, we chose quantitative method research design with panel data to achieve the stated objectives.

4.3.4 Econometric Models to be Estimated

This study is based on three main econometric models that comprise its core topics: demographic change, education levels, and labour force participation. The study is divided into three main topics. The first topic use changes in the share of working age population and old-age dependency ratio as measures of demographic change. It consists of two parts, the first part will investigate the relationship between economic growth and working-age population by age and gender in the Middle East countries, in the second

part of this topic for examining the relationship between population ageing and economic growth in the Middle East countries. The key motivation for this is to ascertain the role of each age group, and its effect on economic growth in the Middle East countries.

The second topic will examine the effect of different levels of education namely primary, secondary and tertiary on economic growth, and to examine whether the effect at all levels of education differs according to gender in the Middle East countries. The primary reason of using this model is to identify the true effects of different levels of education on economic growth as well as to provide better guidance to policy makers since it can give an indication as to which level of education to emphasize in policy formulation. The third topic will examine the relationship between female labour force participation, as the dependent variable, and female education, and fertility rate as independent variables. This model aims to analyse the impact of education and fertility on female labour force participation in the Middle East countries. This model is motivated by the low rate of female labour force participation in the Middle East. In fact, women constitute 48% of the Middle Eastern working-age population, but only 20% of the labour force, making the gender gap in labour force participation high in the Middle East region. Therefore, based on the above-mentioned topics, the econometric models can be formulated for each subject separately, as follows:

4.3.4.1 Demographic Change and Economic Growth

(a) Model Descriptions

This topic addresses the analysis of the working-age population and old-age dependency ratio, which measure of demographic change in Middle East countries during the period 1996-2018. It consists of two parts; the first part will investigate the relationship between economic growth and working-age population by age and gender in the Middle East countries for the period of study, 1996-2018. The working-age population

is classified into three age groups: young workers (15–24 years), middle-aged workers (25–44 years), and senior workers (45–64 years). Based on this classification of the working-age population, potentially, the various age groups have various impacts on economic growth (Wongboonsin & Phiromswad, 2017).

In order to prepare countries to gain demographic dividends, it is important to explore and know the changes in age groups that have a potential impact on the economic growth of countries. The aim of the classification of the working-age population is to explore the most significant changes that have occurred in the Middle East in terms of working-age population by age and gender and to explain the most important possible impacts of these changes on economic growth. In the Middle East where the working-age population is a dominant demographic force in all countries, the study of working-age populations in the different age groups is a very delicate process to access the demographic strength of the region. So, age-group study for the working-age population has been made to get a concrete picture of the workforce of the Middle East and their contribution to the economy.

In terms of the selection of the working-age population subgroups, this study followed the recent studies that examine the internal demographic composition of the working-age population to capture the demographic structure and to ascertain the role of each age group and its effect on economic growth (Oliver, 2015; Wongboonsin & Phiromswad, 2017; Zhang et al., 2015). Thus, according to a recent study by Wongboonsin and Phiromswad (2017), the working-age population is classified into three age groups: young workers (15 to 24 years), middle-aged workers (25 to 44 years), and senior workers (45 to 64 years).

Following the empirical literature on economic growth that offers a variety of independent variables that must be included in the analysis to avoid under-specification,

physical capital stock, labour force participation rate and government expenditure on education are included in the model as additional explanatory variables. In addition, control variables are included, namely share of trade on GDP and regulatory quality as a proxy for governance and institutions (Kaufmann & Kraay, 2003). All the mentioned variables are independent, and the real gross domestic product per capita will be the dependent variable. Furthermore, as a further step for analysis by gender, the working-age population variables are disaggregated by gender (male and female) to investigate their effects on economic growth. The second part of this topic will examine the relationship between population ageing and economic growth. There are two proxies for population ageing are used namely population aged 65 and over and old-age dependency ratio.

(b) Model Specifications

This study utilizes the augmented neoclassical growth theory, an approach inspired by Mankiw et al. (1992). The econometric analysis for economic growth could be estimated as follows:

$$\ln Y_{it} = \alpha_1 + \alpha_2 YW_{it} + \alpha_3 MW_{it} + \alpha_4 SW_{it} + \alpha_5 LFPR_{it} + \alpha_6 CS_{it} + \alpha_7 EE_{it} + \alpha_8 TR_{it} + \alpha_9 RQ_{it} + w_{it} \quad (4.1)$$

Where Y_{it} is the log of real GDP per-capita, YW_{it} denotes young workers aged 15-24, MW_{it} shows middle-aged workers aged 25-44, SW_{it} is senior workers aged 45-64. Moreover, CS_{it} is growth rate of capital stock, $LFPR_{it}$ represents labour force participation ratio, EE_{it} is education expenditures, TR_{it} shows trade openness, RQ_{it} represents regulatory quality, and w_{it} is decomposed into two composite error terms: $w_{it} = u_{it} + e_{it}$; u_{it} is called the individual-specific effect (unobserved heterogeneity), and e_{it} is the remainder error term (regular error term). In the following models, the working-age population variables are disaggregated by age and gender (male and female).

The first model contains the male working-age population variables and the other female working-age population variables.

$$\ln Y_{it} = \alpha_1 + \alpha_2 M.YW_{it} + \alpha_3 M.MW_{it} + \alpha_4 M.SW_{it} + \alpha_5 LFPR_{it} + \alpha_6 CS_{it} + \alpha_7 EE_{it} + \alpha_8 TR_{it} + \alpha_9 RQ_{it} + w_{it} \quad (4.2)$$

In model (4.2), $M.YW_{it}$ represents young male workers aged 15-24, $M.MW_{it}$ is middle-aged male workers aged 25-44, and $M.SW_{it}$ denotes senior male workers aged 45-64.

$$\ln Y_{it} = \alpha_1 + \alpha_2 F.YW_{it} + \alpha_3 F.MW_{it} + \alpha_4 F.SW_{it} + \alpha_5 LFPR_{it} + \alpha_6 CS_{it} + \alpha_7 EE_{it} + \alpha_8 TR_{it} + \alpha_9 RQ_{it} + w_{it} \quad (4.3)$$

Where $F.YW_{it}$ is young female workers aged 15-24, $F.MW_{it}$ denotes middle-aged female workers aged 25-44, and $F.SW_{it}$ is senior female workers aged 45-64.

In the population ageing model, two proxies for population ageing are used namely population aged 65 and over and old-age dependency ratio. The first model contains the population aged 65 and over and the second model contains the old-age dependency ratio.

$$\ln Y_{it} = \alpha_1 + \alpha_2 POP_{it} + \alpha_3 PG_{it} + \alpha_4 LFPR_{it} + \alpha_5 CS_{it} + \alpha_6 EE_{it} + \alpha_7 TR_{it} + \alpha_8 FDI_{it} + w_{it} \quad (4.4)$$

Where Y_{it} is the log of real GDP per capita, POP_{it} is population aged 65 and over, PG_{it} denotes population growth, $LFPR_{it}$ shows labour force participation, CS_{it} is growth rate of capital stock, EE_{it} represents education expenditures, TR_{it} shows trade openness, FDI_{it} represents foreign direct investment, and w_{it} represents the error term. The next model includes old dependency ratio instead of population aged 65 and over due to the suggestion of the theory that population aged 65 and over and the old dependency ratio

are perfectly correlated so their simultaneous inclusion in the same model would raise the problem of multicollinearity.

$$\ln Y_{it} = \beta_1 + \beta_2 OLD_{it} + \beta_3 PG_{it} + \beta_4 LFPR_{it} + \beta_5 CS_{it} + \beta_6 EE_{it} + \beta_7 TR_{it} + \beta_8 FDI_{it} + w_{it} \quad (4.5)$$

Where OLD_{it} is the old-age dependency ratio.

4.3.4.2 Education Levels and Economic Growth

(a) Model Descriptions

This topic relies on the neoclassical growth theory, which confirm that education contributes to economic growth through its impact on research expansion, enhancing knowledge, skills, technological progress, and productivity (Romer, 1989). In order to determine whether the education has a positive or negative impact on the economic growth in the Middle East countries over the period of study, an empirical model is used. This study used three different levels of education namely primary, secondary, and tertiary to examine their effect on economic growth in the Middle East countries over the period 1996-2018. The primary reason for this is to be able identify the true effects of different levels of education on economic growth as well as to provide better guidance to policy makers since it can give an indication as to which level of education to emphasize in policy formulation. Accordingly, the main formulation could be expressed in the form of economic growth of real GDP per capita as a function of primary education, secondary education, tertiary education, government expenditure on education, population growth, labour force growth, physical capital stock and share of trade on GDP.

As a further step, the education levels are disaggregated by gender (male and female) to investigate their effects on economic growth. Gender analysis is motivated by the few studies that investigate the effects of male and female education on economic growth in

the Middle East countries. Most studies are done at the aggregate levels of education without much consideration of the relative effects of male and female education. Therefore, it will be interesting to investigate the effects of male and female education on economic growth as well as to see whether males or females will significantly contribute to the growth. This study may be helpful for the policymakers in the Middle East countries to realign their budget strategy towards education for better educational attainment to achieve higher levels of economic growth.

(b) Model Specifications

This study utilizes the augmented neoclassical growth theory, an approach inspired by Mankiw et al. (1992). The econometric analysis for economic growth could be estimated as follows. Firstly, the annual panel data from 1996 to 2018 were employed to examine the impact of all three levels of education on economic growth in the Middle East countries. Secondly, the education levels were disaggregated by gender (male and female) to investigate their effects on economic growth. Thus, the model to be estimated is as follows:

$$\ln Y_{it} = \alpha_1 + \alpha_2 TPE_{it} + \alpha_3 TSE_{it} + \alpha_4 TTE_{it} + \alpha_5 EXP_{it} + \alpha_6 PG_{it} + \alpha_7 LFG_{it} + \alpha_8 CS_{it} + \alpha_9 TR_{it} + w_{it} \quad (4.6)$$

Where Y_{it} is the log of real GDP per capita, TPE_{it} is primary enrolment for both sexes, TSE_{it} denotes secondary enrolment for both sexes, TTE_{it} shows tertiary enrolment for both sexes, and EXP_{it} is government expenditure on education. Moreover, PG_{it} represents population growth, LFG_{it} shows labour force growth, CS_{it} represents growth rate of capital stock, TR_{it} is share of trade on GDP, and w_{it} represents the error term. In the following models, the enrolment variables are disaggregated by gender (male and female). The first model contains the male enrolment variables and the other female enrolment variables.

$$\ln Y_{it} = \alpha_1 + \alpha_2 MPE_{it} + \alpha_3 MSE_{it} + \alpha_4 MTE_{it} + \alpha_5 EXP_{it} + \alpha_6 PG_{it} + \alpha_7 LFG_{it} + \alpha_8 CS_{it} + \alpha_9 TR_{it} + w_{it} \quad (4.7)$$

In model (4.7), the enrolment variables for both sexes are replaced by male enrolment variables, including MPE_{it} , which shows male primary enrolment, MSE_{it} that denotes male secondary enrolment, and MTE_{it} , which represents male tertiary enrolment.

$$\ln Y_{it} = \alpha_1 + \alpha_2 FPE_{it} + \alpha_3 FSE_{it} + \alpha_4 FTE_{it} + \alpha_5 EXP_{it} + \alpha_6 PG_{it} + \alpha_7 LFG_{it} + \alpha_8 CS_{it} + \alpha_9 TR_{it} + w_{it} \quad (4.8)$$

In model (4.8), the male enrolment variables are replaced by FPE_{it} , which is female primary enrolment, FSE_{it} , which denotes female secondary enrolment, and FTE_{it} , which signifies female tertiary enrolment. In addition, the EXP_{it} , PG_{it} , LFG_{it} , CS_{it} , and TR_{it} variables are included in all the models.

4.3.4.3 Effects of Education and Fertility on Female Labour Force Participation

(a) *Model Descriptions*

This topic analyses the effect of female education and fertility rate of the Middle East countries in order to identify their impact on female labour force participation. This topic is motivated by the low rate of female labour force participation in the Middle East, which is currently lower in comparison to all world regions and even to developing countries that historically had low female participation rates. The main reason of using this model is to provide guidance for policy makers in the Middle East countries to formulate policies that will encourage women to engage actively in the labour market to enhance their productivity and enable them to contribute to achieving a high-income economy.

This model followed the initial studies that analysed the determinants of female labour force participation. When it comes to female labour force participation rate, other variables that has been examined in literature are urbanization, unemployment, and GDP

per capita. These variables have been proven to influence female labour force participation as found in studies by Mishra and Smyth (2010), Tsani et al. (2013), and Tasseven (2017), among others. The dependent variable is the female labour force participation. Selecting this variable as a dependent variable comes from its major role in economic growth. An increasing female labour force participation leads to increased labour supply, which in turn, leads to fast economic growth (Özsoy & Atlama, 2009; Taşseven et al., 2016).

The past two decades have witnessed a dramatic increase of female education in the Middle East. Author expects that female education will cause an increase in the rate of female labour force participation in these countries, where the importance of education is obviously undeniable in terms of generating highly skilled workers. Regarding economic growth proxy, an increase in the real GDP reflects a tangible progress in the economic activities, where author expects these activities will positively affect an increase in the job's opportunities for females. The other variables are fertility, urbanization and unemployment, where the main aim of selection is to analyse their effect on the female participation in the Middle East countries.

(b) Model Specifications

This study followed the studies conducted by Alam and Mamun (2016), Ballarino et al. (2013), Lee and Lee (2014), among others, that analysed the determinants of female labour force participation. Thus, the model to be estimated is as follows:

$$FLPR_{it} = \alpha_1 + \alpha_2 TFR_{it} + \alpha_3 FPE_{it} + \alpha_4 FSE_{it} + \alpha_5 FTE_{it} + \alpha_6 URN_{it} + \alpha_7 FUN_{it} + \alpha_8 GDP_{it} + w_{it} \quad (4.9)$$

Where $FLPR_{it}$ is female labour force participation rate for country i and year t , TFR_{it} denotes total fertility rate, FPE_{it} shows female primary education, FSE_{it} is female

secondary education, and FTE_{it} is female tertiary education. Moreover, URB_{it} represents urban population, FUN_{it} is female unemployment, GDP_{it} is growth rate of GDP per capita, and w_{it} is decomposed into two composite error terms: $w_{it} = u_{it} + e_{it}$; u_{it} is called the individual-specific effect (unobserved heterogeneity) and e_{it} is the remainder error term (regular error term).

4.3.5 Estimation Method

As previously emphasized, panel data are also termed as longitudinal data or cross-sectional time-series data. Observations of the same units in numerous diverse time periods is contained in the longitudinal data (Kennedy, 2008). A panel data set has multiple entities, each of which has repeated measurements at different time periods. Individual effect, time effect, or both may be contained in the panel data, which undergo analysis using fixed effect and random effect models.

With the increasing availability of panel data, numerous academicians, practitioners, and learners have shown interest in panel data modelling due to the greater variability and the enablement in exploring extensive issues which these longitudinal data possess in comparison to cross-sectional or time-series data on their own (Kennedy, 2008). As reported by Baltagi (2005), greater information is generated by the panel data with greater variability, a lesser amount of collinearity amongst the variables, greater extent of freedom, in addition to greater efficiency. The panel data models certainly attract more interest with a well-ordered panel data since they offer means of addressing with heterogeneity and observe the fixed and random influences in the longitudinal data.

Several studies on the impacts of demographic change and human capital on the economic growth through the employment of panel data models have been carried out, such as studies performed by Higgins (1998), Hondroyannis (2006), Bloom et al. (2007), Cervellati et al. (2017), Cruz and Ahmed (2018), Abdelbary and Benhin (2019), and

Bucci et al. (2019). Reed and Ye (2011) in their study had assessed the performances of several common panel data estimators in the presence of both serial correlation and cross-sectional dependence. The study had emphasized on the fixed effects models with fewer than one hundred cross-sectional units and between 10 and 25 time periods (like those that are generally used in empirical growth studies). An analysis was conducted on a linear model with fixed effects and an error structure which permits both serial correlation and cross-sectional dependence in the experiments. Out of sample simulated panel data sets were applied with these applications, and it was revealed to have accomplished perfectly.

The data analysis technique employed in this current research is the panel data analysis as the observations (n) for individual country was smaller than 30 ($n < 30$) for a typical time series analysis to be executed. A unit root test is an essential requirement for comprehending the stationarity of the data in the panel data analysis. Thus, a unit root test that explicates the technique to be employed in the panel data analysis will be executed in this research. In instances that each and every one of the variables are stationary at level I (0), then the ordinary least squares (OLS) panel analysis is adequate. The OLS panel is appropriate for the analysis of the coefficients with pooled OLS, random effects model and fixed effects model.

It was stated in a report by Baltagi (2005) that it was possible for static linear panel data models to be executed by employing the (xtreg) command in Stata. For N small and T large, this might be an appropriate pooling technique. However, it might not be viable for panels where N is large, and T is small. Additionally, during his workshop presentation in the International Monetary Fund, Pedroni (2008) had addressed the method for the selection of the optimal estimator for the panel dataset. He maintained that the percentage of the number of individuals in regard to duration of time (N/T) may

possibly be an effective method for the selection of the optimal technique. Pedroni proposed that in cases where the number of individuals are smaller in comparison to the time series, then, the static panel data models are the finest estimators to employ for estimation purposes. Hence, this current study utilizes the static linear panel data models for ten selected Middle Eastern countries encompassing the duration within the years ranged from 1996 up to 2018.

Accordingly, for the investigation of the association among the demographic change, education and economic growth in the Middle Eastern countries, this current study will utilize the three different panel data models comprising of the pooled ordinary least squares, random effects, and fixed effects. The statistical diagnostics have a significant part in the identification of the validity of the estimations' outcomes in extended analysis. Following the attainment of a convenient model, the analysis will be continued with the diagnostic tests to assess the multicollinearity, heteroskedasticity, and serial correlation, which, together, make the method reliable (See Appendix A for more detail of the software and estimation procedure).

4.4 Data Sources and Variables Definitions

This study utilizes the annual panel data of ten Middle East countries namely Bahrain, Egypt, Iran, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Turkey, and the United Arab Emirates within the years ranging from 1996 up to 2018. A huge portion of the data are derived from the World Bank online database, World Development Indicators (<https://databank.worldbank.org/source/world-development-indicators>). The remainder of the data are secured from the Penn World Table (URL: www.ggdgc.net/pwt) and the Worldwide Governance Indicators (URL: www.govindicators.org) (See Appendix B for more detail of the variables sources). The definitions and descriptions of variables utilized in the estimations of the entire empirical models are forwarded here according to the

World Bank and International Labour Organization definitions is contained in the ensuing sections. Founded on the theories, empirical findings, and data availability, the variables of the study were meticulously chosen.

4.4.1 Gross Domestic Product

Real Gross domestic product (GDP) entails gross domestic product that is converted into international dollars by utilizing purchasing power parity (PPP) rates. The GDP is signified by the sum of gross value totalled by all local producers in the economy of the country concerned, in addition to any product taxes, less any subsidies not counted in the estimation of output. The calculation does not involve the subtraction for the depreciation of fabricated capital assets, or for the reduction and depreciation of natural resources. The GDP per capita gauges the economic output of a country that accounts the size of its population. In the equation, its total population divides the gross domestic product of its country. This method is a suitable quantification of gauging the standard of living of a country. It indicates the prosperity of a country and is also an indication to its people on the affluent status of their country.

4.4.2 Working Age Population

The definition for the working age population is the cohort of the population within the age range of 15 years old up to 64 years old. The fundamental indicator for rate of employment is the portion of the working age population who are within the age range of 15 years old up to 64 years old who are employed. The measurement and quantification of the working-age population is employed to provide an estimation of the overall number of prospective workers within an economy.

The working-age population data were taken from the World Development Indicators (WDI) of the World Bank. WDI provides data for five-year age groups. Then, the researcher combines multiple age groups into three age groups: young workers (15 to 24

years), middle-aged workers (25 to 44 years), and senior workers (45 to 64 years). The obtained data contains data for both sexes, male, and female age groups. Working-age population groups for both sexes are a percentage of the total population, male working-age population groups are a percentage of the male population, and female working-age population groups are a percentage of the female population.

4.4.3 Population Aged 65 and Over

Population ages 65 and above as a percentage of the total population. Population is calculated using the de facto definition of population, which includes all inhabitants regardless of legal status or nationality.

4.4.4 Old-age Dependency Ratio

The old-age dependency ratio entails the gauging of the number of dependents who are categorized in the cohort aged above 65 years old in comparison with the total population who are in the cohort within the age range of 15 years old up to 64 years old. This indicator provides the illumination into the quantification of the population categorized within the cohort of the non-working age in comparison with the number of people who are deemed as included in the category of working age group.

$$\text{Old age dependency ratio} = \frac{\text{population (65 and over)}}{\text{population (15 - 64)}} \times 100$$

4.4.5 Population Growth

The annual rate of population growth for year 't' entails the exponential rate of growth involving the midyear population from year t-1 to t, presented in the form of a percentage. Population is according to the existing definition of population, that takes into account the people who are residing in a country in its entirety irrespective of the legal status or citizenship.

4.4.6 Primary Enrolment Ratio

Primary education total enrolment irrespective of age, is presented as a percentage of the population who are categorized according to the recognized official primary education age. The primary enrolment ratio may surpass 100% because of the incorporation of the over-aged and under-aged students due to the early or late school entrance and the result of being a repeat student and retained in the same grade again.

4.4.7 Secondary Enrolment Ratio

The total secondary education enrolment irrespective of age, is presented as a percentage of the population who are categorized in the cohort considered as of the official secondary education age. The ratio of the secondary enrolment may surpass 100% as the result of the incorporation of the over-aged and under-aged students who had to be retained in the same grade, or/and due to early or late school entrance into the secondary school.

4.4.8 Tertiary Enrolment Ratio

The total tertiary education enrolment irrespective of age is presented as a percentage of the total population of the cohort categorized in the five-year age group ensuing the completion of secondary school education.

4.4.9 Total Fertility Rate

The total fertility rate is representative of the anticipated number of children expected to be given birth by a woman in instances that she survives to the termination age of her childbearing years, and that she gives birth to children based on the age-specific fertility rates of a particular year.

4.4.10 Capital Stock

Capital stock entails the quantity of common and preferred shares which a firm is given the authority to issue, based on its corporate charter. The total obtained by the corporation once it dispensed shares of its capital stock and its report is documented in the shareholders' equity section in the balance sheet. Firms have the prerogative in the issuance of more capital stock over a period or buy back shares which are presently under the ownership of shareholders.

4.4.11 Urban Population

Urban population entails the middle-of-the-year population in areas ascertained and determined as under the category of urban in individual countries, or it is defined as the individuals residing in urban areas according to the definition by national statistical offices. To be defined as 'Urban' is generally in accordance with the magnitude of the locality. The populace that is not included in the category of urban is perceived as rural. The data are compiled and undergo smoothening by United Nations Population Division.

4.4.12 Unemployment Rate

The rate of unemployment is indicated by the proportion of the workforce who are not working but is available for work and who on the lookout to be employed. Certain condition of being out of job is inevitable. At certain period, there will be a number of workers are momentarily out of job, or who are in transitional job phase during the time when employers search for the suitable candidates, and workers hunt for better jobs.

4.4.13 Labour Force Participation Rate

The rate of participation of the labour force is the percentage of the population who falls in the cohort within the age range of 15 years old up to 64 years old, who are economically active: involving the overall population included in the labour supply for the generation of merchandises/products and services within a particular period. The

participation rate of the labour force is estimated as the labour force which is divided by the total working-age population.

4.4.14 Government Expenditure on Education

General government expenditure budgeted for education (involving current, capital, and transfers) is represented in the form of a percentage of the GDP. General government frequently denotes the local, regional, and central governments.

4.4.15 Foreign Direct Investment

Foreign direct investment (FDI) is defined as net inflows of investment with the purpose of acquiring a long-term managerial stake in a business operating in a country other than the investor's home country. It is made up of the following components: equity capital, earnings reinvestment, other long-term capital, and short-term capital. This series indicates net inflows into the reporting economy from foreign investors, and it is split by the country's gross domestic product.

4.4.16 Trade Openness

Trade openness entails the summation of the exports and imports of products and services gauged as a portion of the gross domestic product (GDP).

4.4.17 Regulatory Quality

Regulatory quality seizes the perceived notions of the government capability to put together and execute firm policies and rules which allow and elevate private sector progress and expansion. An estimation provides the country's score on the aggregate indicator, in the form of units of a standard normal distribution, that is within the range of an approximation of -2.5 up to 2.5.

4.5 Chapter Summary

This chapter discussed the conceptual and theoretical framework and econometric models that have been used to answer all the research questions. This study employed neoclassical growth theory to examine the relationship between demographic change, education and economic growth. Based on theoretical arguments and econometric approaches, empirical models have been developed. In addition to that, data sources and variables definitions are also presented in this chapter.

Universiti Malaya

CHAPTER 5: DEMOGRAPHIC CHANGE AND ECONOMIC GROWTH

5.1 Introduction

The attention of economists on age structure can be traced back to the late 1990s. Advocates of age composition censure growth models for their emphasis on population growth, and for disregarding the significant part played by population dynamics, specifically on the shifting age composition within expanding populations. Matters that are important for economic growth, as alleged, is not solely posited on the rate of population growth on its own, on the contrary, it is due to the shifting age composition of population as countries experience demographic shifts. These collectives highlight the varying economic characteristics and requirements change at varying phases of life: the young cohort of the population need thorough health and educational investment, while adults, considered to be at their prime age, offer the human resource for the workforce and create savings. Meanwhile, the aged need wellbeing attention and retirement income. Subsequently, shifts in the age composition develop a substantial and important effect on per capita income (Bloom et al., 2001; Dhonte, 2000).

In the same line of investigation, declines in the mortality rate of infant and child generated a 'baby boom', which resulted in an extensive working age cohort. Succeeding declines in fertility rate lessened the dependency ratio. This shift in the age composition seems to yield a demographic dividend which is extremely positive according to the prospective economic outcomes. The supply of labour as per capita increases once the huge baby boom collective hits the ages fit for working, and also rises with the rise in the participation of females in the workforce, which is generally linked with the decrease in fertility. The huge working age group will engage in savings for retirement, possibly at a more extensive rate as compared to previously periods, because of the lengthier life expectancy, thus generating prospective funds for investment. The lengthier lifespan and the reduction in mortality rate might boost educational investments.

This chapter presents the empirical specifications and findings for the five empirical models on demographic change and economic growth in the Middle East. Applying the neoclassical growth model framework, the first baseline empirical model examines the relationship between working-age population for both sexes disaggregated by age and economic growth. In the second and third models, the working-age population variables are disaggregated by age and gender (male and female). The second model contains the male working-age population variables, and the third model includes the female working-age population variables. The fourth and fifth models examine the relationship between population aged 65 and over and old-age dependency ratio and economic growth. The three alternative models of panel data are pooled ordinary least squares, random effects, and fixed effects, which are employed for all model estimations and for comparison. In further analysis, the analysis will proceed with the diagnostic tests to check for multicollinearity, heteroskedasticity, and serial correlation, which, together, make the method reliable. The model estimations on the relationship between demographic change and economic growth in this study utilized data of annual observations for 23 years from 1996 to 2018, covering 10 countries in the Middle East.

5.2 Overview of Demographic Change

This section analyses the evolution of population growth in the Middle East countries. During the twentieth century, particularly in the second half, the population in the Middle East increased rapidly due to early marriages and high fertility. The demographic weight of Middle East countries differs virtually. The region includes two small countries (Bahrain and Qatar, with around 4 million inhabitants). The three countries with the largest populations are Egypt, Turkey, and Iran with more than 81 million inhabitants each, and, together, account for 80% of the region's total population. The population growth in the Middle East countries increased rapidly between 1980 and 2018. In 2018, the region totalled 329 million inhabitants. Overall, the population of the Middle East

grew by around 132% from 1980 to 2018. In respect of the fertility rates, all of the countries mentioned in this study saw their fertility rates drop between 1996 and 2018. This can be attributed to the growing education and job opportunities for women.

Moreover, a major change occurred in the working age population ages from 15-64. Since 1980, the working-age population has risen quickly, reaching 63% in 1996, and further increasing to 73% in 2018. The working-age population in this study is divided into three categories: young workers (15 to 24 years), middle-aged workers (25 to 44 years), and senior workers (45 to 64 years), which are also disaggregated by gender (male and female). Thus, it is important to have an overview of the individual components of the working age population. Figures below illustrate these working-age groups from 1996 to 2018 in the Middle East countries.

As shown in Figure 5.1, the young workers aged 15-24 declined marginally from 18% in 1996 to 14% in 2018. The young male workers' ratio decreased to 12% in 2018, compared to 15.6% in 1996. Nevertheless, the young male workers' ratio remained lower than that for the females over the same period. The young female workers' ratio has decreased marginally since 1996. The period from 1996 to 2018 witnessed a decrease in the young female workers' ratio from 17% to 14%.

Figure 5.2 shows the middle-aged workers aged 25-44 in the Middle East countries from 1996 to 2018. Overall, the middle-aged workers' ratio has increased over the years. This figure clearly shows that there is a significant disparity between the middle-aged male workers' ratio and the middle-aged female workers' ratio. Meanwhile, middle-aged male workers remained higher than the middle-aged female workers over the same period, with the difference remaining constant.

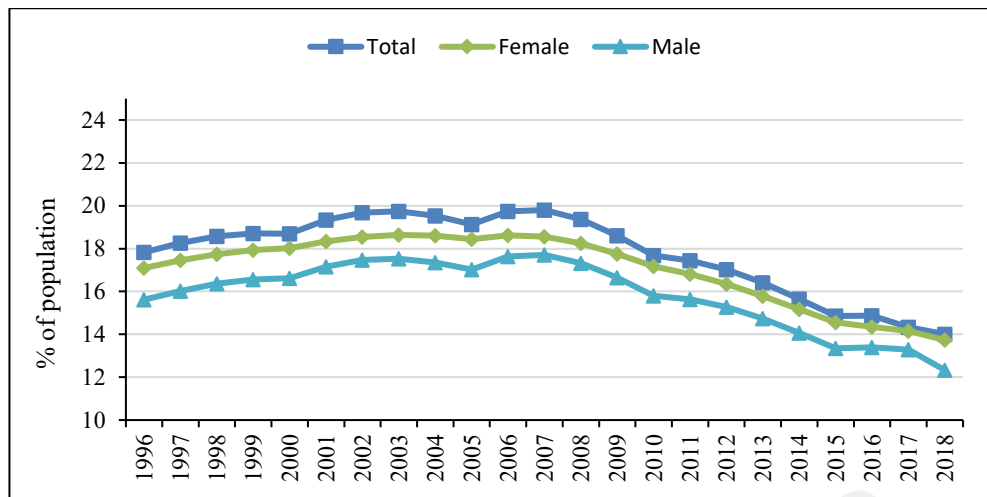


Figure 5.1: Young workers share of working-age population, 1996-2018
Source: World Bank (2020).

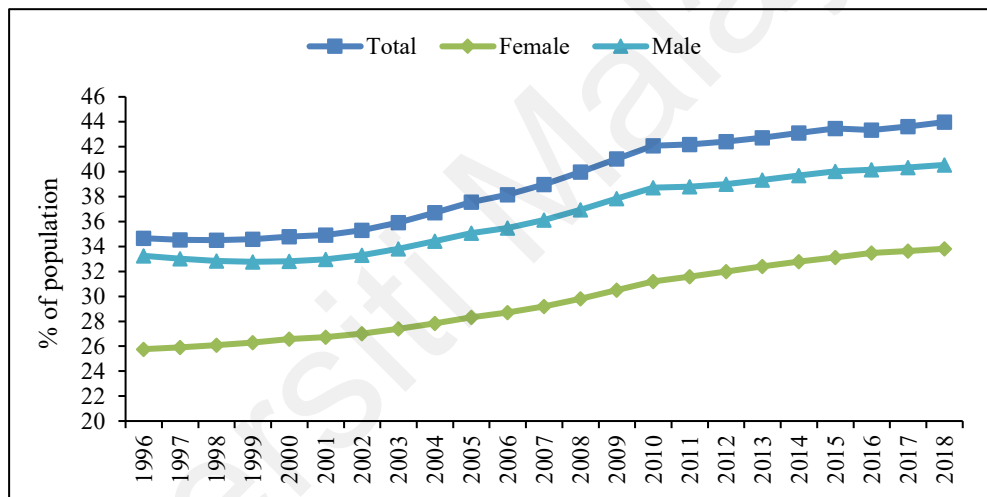


Figure 5.2: Middle-aged workers share of working-age population, 1996-2018
Source: World Bank (2020).

Figure 5.3 shows that the senior workers' ratio increased consistently over the years. Overall, the average senior workers' ratio in the Middle East increased from 11% in 1996 to 17.5 in 2018. Meanwhile, during the same period, the average senior male workers' ratio was at 13%, and the senior female workers' ratio was at 11%. It is clearly seen that there is a large and persistent difference between the senior male workers and senior female workers' ratio. This gap has not diminished, and the senior male workers has remained higher than that for the senior female workers throughout.

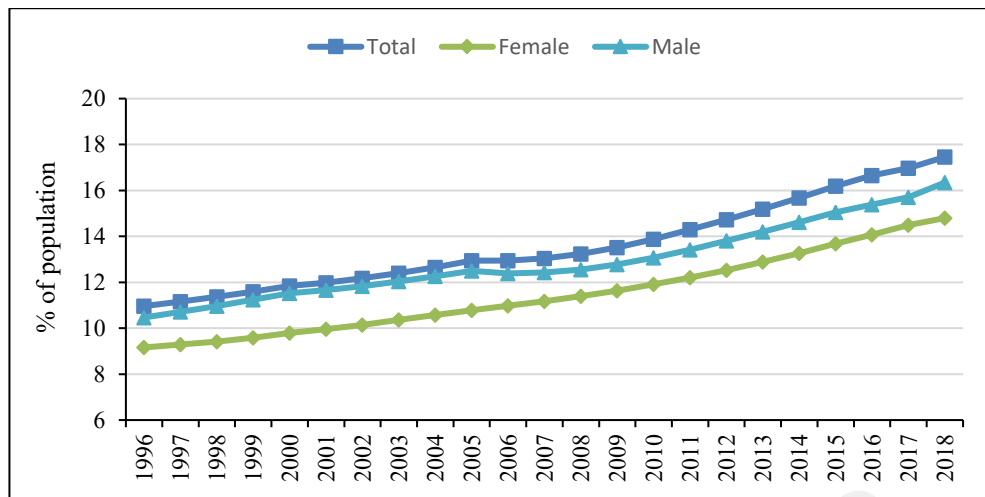


Figure 5.3: Senior workers share of working-age population, 1996-2018

Source: World Bank (2020).

In terms of trends, the young workers’ ratio showed a gradual decline from 18% in 1996 to 14% in 2018. The middle-aged workers’ ratio continued to remain high averaging at about 37.2%. In contrast, the senior workers’ ratio increased consistently from 11% in 1996 to 14% in 2010, and further increased to 17.5% in 2018. This increasing trend for the senior workers’ ratio and declining ratio for young workers is similar to the trends in developed countries that experience an ageing population. Therefore, a huge surge in the working age population in the Middle East as a demographic force offers a historic opportunity that countries must seize. The opportunity to get benefits due to a change in age structure is not forever, and the ageing population will ultimately constrain economic growth.

Figure 5.4 shows the old-age dependency ratio in the Middle East countries from 1996 to 2018. This figure clearly shows that the old-age dependency ratio, which calculated according to the population ages above 65 years divided by the population ages 15–65 years, has slightly increased from 4.6% in 1996 to 5.4% in 2018 in the Middle East and this trend is expected to continue increasing in the coming decades. This indicator reflects the number of people of non-working age compared to the number who are of working

age. The increasing working-age population lead to the decreasing age dependency ratios in most Middle East countries.

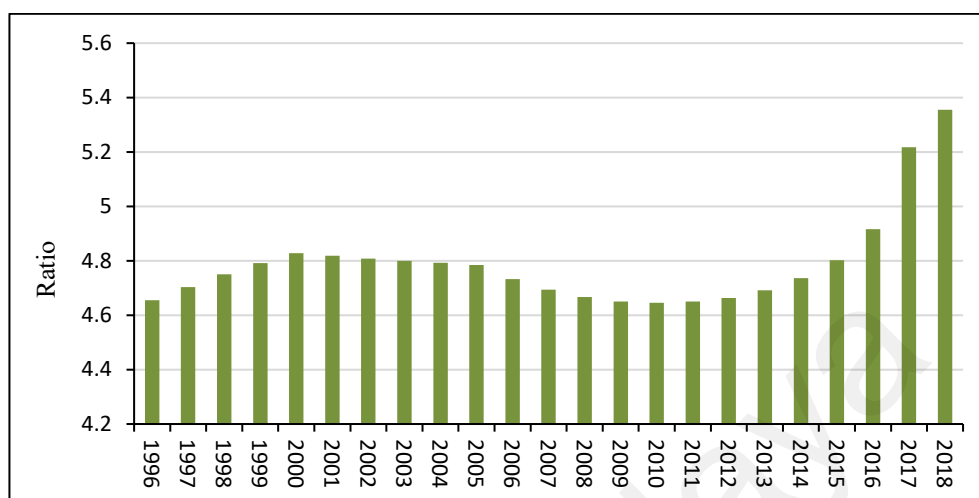


Figure 5.4: Old-age dependency ratio in the Middle East, 1996-2018

Source: World Bank (2020).

5.3 Descriptive Statistics

Table 5.1 reports the descriptive statistics for all the variables in the analysis for the selected ten Middle East countries. The real GDP per capita (in logs) indicates a minimum of 8.48 and the maximum of 11.77, with an average of 10.23. Young workers aged 15-24 indicates a minimum of 10.20 and the maximum being 26.21 as a share of working-age population. Middle-aged workers aged 25-44 show a minimum of 24.35 and the maximum of 60.38 which indicates the highest share of the working-age population. Senior workers aged 45-64 displays a minimum of 8.81 and the maximum of 20.76 which presents the lowest share of the working-age population. Proxies for population ageing have the minimum ratio of 0.75 for population aged 65 and over and 0.01 for old-age dependency and the maximum ratio of 7.96 for population aged 65 and over and 0.12 for old-age dependency.

Growth rate of capital stock displays a minimum negative value of -16.64 and the maximum being 40.71. Labour force participation ratio shows an average of 58.83, with

a minimum of 29.6 and the maximum of 87.56. The figure for education expenditures indicates the presence of gaps between the minimum and maximum government expenditure values in countries, with a minimum of 1 and the maximum of 8.33. Trade openness, which is the sum of exports and imports of goods and services measured as a share of gross domestic product have the maximum value of 191.88 and average value of 88.46. Regulatory quality displays a minimum negative value of -1.72 and the maximum being 1.12.

Table 5.1: Descriptive statistics for demographic change model

Variables	Observations	Mean	St. Dev.	Min.	Max.
Real GDP per capita	206	10.23	0.94	8.48	11.77
Young workers	210	18.14	3.05	10.20	26.21
Middle-aged workers	210	38.60	9.99	24.35	60.38
Senior workers	210	13.26	2.64	8.81	20.76
Population aged 65 and over	210	3.15	1.75	0.75	7.96
Old dependency ratio	210	0.05	0.03	0.01	0.12
Labour force participation	210	58.83	14.50	29.6	87.56
Growth rate of capital stock	210	10.57	8.19	-16.64	40.71
Education expenditures	210	4.11	1.42	1	8.33
Foreign direct investment	210	2.79	3.99	-3.15	33.57
Trade openness	205	88.46	37.54	29.23	191.88
Regulatory quality	210	0.10	0.64	-1.72	1.12

Source: Authors' computation from STATA 15.

5.4 Empirical Results

5.4.1 Unit Root Test

Table 5.2 shows the results based on the panel unit-root tests – Levin Lin Chu test and ADF-Fisher Chi-square. The results reveal that the tests are statistically significant at the 5% significance level. This means that there is no unit root and that the data are stationary at level. This allows the researcher to run the regressions for analysing the empirical results of this study using static panel data models.

Table 5.2: Panel unit root tests for variables in the demographic change model

Variables	Levin, Lin & Chu	ADF - Fisher Chi-square	Final result
Real GDP per capita	-13.696 (0.000)	29.629 (0.041)	I (0)
Young workers	-7.533 (0.000)	60.726 (0.000)	I (0)
Middle-aged workers	-6.126 (0.000)	43.938 (0.002)	I (0)
Senior workers	-2.260 (0.012)	69.316 (0.000)	I (0)
Population aged 65 and over	-3.194 (0.001)	43.399 (0.002)	I (0)
Old dependency ratio	-1.696 (0.045)	45.811 (0.001)	I (0)
labour force participation rate	-7.589 (0.000)	44.533 (0.001)	I (0)
Growth rate of capital stock	-2.509 (0.006)	55.324 (0.000)	I (0)
Education expenditure	-3.059 (0.001)	58.709 (0.000)	I (0)
Foreign direct investment	-2.247 (0.012)	68.593 (0.000)	I (0)
Trade openness	-5.515 (0.000)	33.321 (0.015)	I (0)
Regulatory quality	-2.476 (0.007)	42.425 (0.002)	I (0)

Notes: Values in parentheses refer to the probability of the test statistics. The null hypothesis of Levin, Lin & Chu t-test assumes common unit root process, while the ADF - Fisher Chi-square assumes individual unit root process.

5.4.2 Static Panel Data Models

The three alternative models of panel data are pooled Ordinary Least Squares (OLS), random effects, and fixed effects, which will be employed to examine the impact of the demographic change on economic growth.

The empirical estimations are reported in tables as follows: First, Table 5.3 displays the demographic variables impact on economic growth. Then, Table 5.4 and Table 5.5 provide the impact of the working-age population variables disaggregated by age and gender (male and female) on economic growth. Finally, Table 5.6 and Table 5.7 focus on the effect of population aged 65 and over and old-age dependency ratio on economic growth. The tables comprise the results of all five model specifications expressed in equations 4.1, 4.2, 4.3, 4.4 and 4.5.

5.4.3 Empirical Results - Composition of Working Age Population

Table 5.3 shows the results of how the demographic variables affect the economic growth. Based on the results, Breusch-Pagan LM test favours the random effects model to the pooled OLS technique in that the model is more appropriate since the p-value for the estimated test statistic is less than 0.01. The F-test favours the fixed effects model since the p-value is less than 0.01. In addition, the Hausman test reveals that the fixed effects model is better than the random effects because the p-value is less than 0.01 (see Appendix C). The following step is to run diagnostic tests. The result of the variance inflation factor (VIF) shows that the mean VIF is less than 10 (see Appendix L). This denotes that multicollinearity is not a problem. Besides, the results display that the null hypotheses are rejected (p-value less than 0.01) for the heteroskedasticity and serial correlation test. This indicates that there are heteroskedasticity and serial correlation problems. In further analysis, since there are heteroskedasticity and serial correlation problems, the fixed effects model with robust standard errors is applied to obtain unbiased standard errors of estimators.

Furthermore, the analysis proceeds with the Ramsey RESET test (test of omitted variables) and Durbin Wu–Hausman (tests of endogeneity). The results reveal that the p-value of the tests are more than 0.05, then there is no evidence of functional form misspecification and the variables are exogenous (see Appendix U and Appendix DD).

Table 5.3: The impact of demographic variables on economic growth

Variables	Pooled OLS	Random Effects	Fixed Effects	Robust Fixed effects Model
Young workers, both sexes	0.014 (0.90)	0.008 (0.61)	0.028 (3.16) ***	0.028 (2.14) *
Middle-aged workers, both sexes	0.050 (10.06) ***	0.046 (8.21) ***	0.024 (4.58) ***	0.024 (3.72) ***
Senior workers, both sexes	0.001 (0.07)	0.008 (0.68)	0.069 (7.24) ***	0.069 (2.30) **
Labour force participation ratio	0.038 (9.84) ***	0.029 (6.89) ***	-0.005 (-1.05)	-0.005 (-0.50)
Growth rate of capital stock	0.010 (2.99) ***	0.010 (3.76) ***	0.001 (0.39)	0.001 (0.34)
Education expenditures	0.086 (4.03) ***	0.025 (1.14)	-0.014 (-0.82)	-0.014 (-0.23)
Trade openness	-0.004 (-3.95) ***	-0.003 (-3.24) ***	-0.003 (-3.15) ***	-0.003 (-1.30)
Regulatory quality	-0.002 (-0.03)	0.048 (0.72)	0.110 (1.58)	0.110 (0.85)
Constant	5.699 (9.85) ***	6.566 (13.24) ***	8.458 (23.86) ***	8.458 (11.99) ***
Breusch-Pagan LM test	336.93 (0.000) ***			
F-test (fixed effects)	71.99 (0.000) ***			
Hausman test	124.45 (0.000) ***			
R-squared	0.872	0.263	0.492	0.492
Observations	201	201	201	201
Multicollinearity (Mean VIF)	2.87			
Heteroskedasticity (χ^2 - stat)			2298.68 (0.000) ***	
Serial Correlation (F-stat)			82.357 (0.000) ***	
Ramsey RESET test (Omitted variables)				4.07 (0.055)
Durbin Wu-Hausman (Endogeneity tests)				0.435 (0.510) 0.413 (0.521)

Notes: Figures in the parentheses are t-statistics, except for Breusch-Pagan LM test, F-test, Hausman test, Heteroskedasticity, Serial Correlation, Ramsey RESET, and Durbin-Wu-Hausman which are p-values. *, ** and *** denote 10%, 5%, and 1% level of significance, respectively.

The results of the robust fixed effects model in Table 5.3 reveal that young workers, middle-aged workers, and senior workers have a positive and significant impact on economic growth. This result is consistent with the findings of Bloom and Williamson (1998), and Wongboonsin and Phiromswad (2017) who revealed that there is a positive correlation between the share of the working-age population and economic growth.

The labour force participation rate has an effect on economic growth. This may be due to the unskilled labour force in Middle East countries (Pissarides & Véganzonès-Varoudakis, 2006); and means that unskilled workers do not obtain high productive jobs that promote economic growth.

Growth rate of capital stock has no effect on economic growth since the coefficient is insignificant. Regarding education expenditure, the results show that government education expenditure has no effect on economic growth. This might be due to the allocated funds for education sector development not being properly utilized (Nurudeen & Usman, 2010). In the study by Heyneman (1997), it was shown that the main reason behind the low-quality education in the Middle East and North Africa is not a scarcity of monetary resources but the inefficiency of managing the resources already allocated. Similarly, the trade openness and regulatory quality have no effect on economic growth since the coefficients are insignificant.

Table 5.4 displays the results of the effect of the male working-age population on economic growth. The Breusch-pagan LM test favours the random effects model to the pooled OLS technique in that the model is more appropriate since the p-value for the estimated test statistic is less than 0.01. The F-test favours the fixed effects model since the p-value is less than 0.01. In addition, the Hausman test reveals that the fixed effects model is better than the random effects because the p-value is less than 0.05 (see Appendix D). The following step is to run diagnostic tests. The result of the variance inflation factor (VIF) shows that the mean VIF is less than 10 (see Appendix M). This denotes that there is no problem of multicollinearity. Besides, the results display that the null hypotheses are rejected (p-value less than 0.01) for both the heteroscedasticity test and autocorrelation test. This indicates that there are heteroskedasticity and

autocorrelation problems. Therefore, the fixed effects model with robust standard errors is used to rectify the heteroskedasticity and autocorrelation problems.

Table 5.4: The impact of male working-age population on economic growth

Variables	Pooled OLS	Random Effects	Fixed Effects	Robust Fixed effects Model
Young workers, male	-0.643 (-0.43)	1.604 (1.58)	2.601 (3.00) ***	2.601 (1.85) *
Middle-aged workers, male	6.957 (8.37) ***	4.527 (6.90) ***	3.800 (6.75) ***	3.800 (5.00) ***
Senior workers, male	1.479 (1.19)	3.244 (3.61) ***	4.613 (5.91) ***	4.613 (2.59) **
Labour force participation ratio	0.018 (3.21) ***	0.010 (2.08) **	-0.006 (-1.33)	-0.006 (-0.64)
Growth rate of capital stock	0.012 (3.59) ***	0.007 (2.86) ***	0.002 (0.92)	0.002 (0.71)
Education expenditures	0.148 (7.02) ***	-0.015 (-0.74)	-0.025 (-1.43)	-0.025 (-0.38)
Trade openness	-0.006 (-5.57) ***	-0.004 (-3.33) ***	-0.003 (-3.14) ***	-0.003 (-1.36)
Regulatory quality	0.024 (0.40)	0.134 (1.87) *	0.106 (1.49)	0.106 (0.85)
Constant	6.104 (11.08) ***	7.416 (18.12)	8.326 (22.98) ***	8.326 (12.43) ***
Breusch-Pagan LM test		341.60 (0.000) ***		
F-test (fixed effects)			71.89 (0.000) ***	
Hausman test			71.64 (0.000) ***	
R-squared	0.867	0.845	0.756	0.756
Observations	201	201	201	201
Multicollinearity (Mean VIF)	2.96			
Heteroskedasticity (χ^2 – stat)			3194.79 (0.000) ***	
Serial Correlation (F-stat)			107.744 (0.000) ***	
Ramsey RESET test (Omitted variables)				3.41 (0.067)
Durbin Wu–Hausman (Endogeneity tests)				1.079 (0.299) 1.029 (0.312)

Notes: Figures in the parentheses are t-statistics, except for Breusch-Pagan LM test, F-test, Hausman test, Heteroskedasticity, Serial Correlation, Ramsey RESET, and Durbin-Wu–Hausman which are p-values. *, ** and *** denote 10%, 5%, and 1% level of significance, respectively.

Furthermore, the analysis proceeds with the Ramsey RESET test (test of omitted variables) and Durbin Wu–Hausman (tests of endogeneity). The results reveal that the p-

value of the tests are more than 0.05, then there is no evidence of functional form misspecification and the variables are exogenous (see Appendix V and Appendix EE).

The results of the robust fixed effects model in Table 5.4 reveal that young male workers, middle-aged male workers and senior male workers have a positive and significant impact on economic growth. The results are supported by Bloom and Canning (2004), and Bloom and Williamson (1998) who concluded that the share of the working-age population has a positive impact on economic growth. In addition, Song (2013) reported that the rapid economic growth in the East, South-east, and South Asian economies is attributed to the working-age population and growth of the working-age population. In the research by Ahmad and Khan (2019), they showed the positive contribution of the working age population on the economic growth in developing economies. Growth rate of capital stock, labour force participation ratio, education expenditures, trade openness, and regulatory quality have no effect on economic growth since the coefficients are insignificant.

Table 5.5 offers the results of the impact of female working-age population on economic growth. Based on the results, the Breusch-pagan LM test favours the random effects model to the pooled OLS technique in that the model is more appropriate since the p-value for the estimated test statistic is less than 0.01. The F-test favours the fixed effects model since the p-value is less than 0.01. In addition, the Hausman test reveals that the fixed effects model was better than the random effects because the p-value was less than 0.01 (see Appendix E). The next step involved the running of diagnostic tests. The result of the variance inflation factor (VIF) showed that the mean VIF was less than 10 (see Appendix N), denoting no serious problem of multicollinearity. Besides, the results displayed that the null hypotheses were rejected (p-value less than 0.01) for both the heteroscedasticity test and autocorrelation test. This indicates that there were

heteroskedasticity and autocorrelation problems. Therefore, the fixed effects model with robust standard errors was used to rectify the problems.

Table 5.5: The impact of female working-age population on economic growth

Variables	Pooled OLS	Random Effects	Fixed Effects	Robust Fixed effects Model
Young workers, female	2.541 (1.49)	1.755 (2.10) **	1.977 (2.45) **	1.977 (1.86) *
Middle-aged workers, female	6.690 (6.07) ***	1.491 (2.36) **	1.299 (2.13) **	1.299 (1.12)
Senior workers, female	-4.624 (-2.95) ***	7.570 (6.92) ***	8.426 (7.88) ***	8.426 (1.95) *
Labour force participation ratio	0.041 (7.41) ***	0.003 (0.62)	-0.001 (-0.32)	-0.001 (-0.19)
Growth rate of capital stock	0.006 (1.80) *	0.001 (0.55)	0.001 (0.14)	0.001 (0.10)
Education expenditures	0.109 (4.25) ***	-0.009 (-0.53)	-0.005 (-0.27)	-0.005 (-0.09)
Trade openness	-0.005 (-4.40) ***	-0.002 (-2.18) **	-0.002 (-2.38) **	-0.002 (-1.16)
Regulatory quality	0.133 (1.81) *	0.200 (2.98) ***	0.191 (2.92) ***	0.191 (1.22)
Constant	5.617 (8.16) ***	8.539 (20.93) ***	8.638 (25.12) ***	8.638 (14.75) ***
Breusch-Pagan LM test	431.04 (0.000) ***			
F-test (fixed effects)	107.12 (0.000) ***			
Hausman test	21.96 (0.000) ***			
R-squared	0.834	0.516	0.521	0.521
Observations	201	201	201	201
Multicollinearity (Mean VIF)	3.62			
Heteroskedasticity (χ^2 - stat)			1913.97 (0.000) ***	
Serial Correlation (F-stat)			90.57 (0.000) ***	
Ramsey RESET test (Omitted variables)				3.14 (0.092)
Durbin Wu-Hausman (Endogeneity tests)				2.648 (0.104) 2.545 (0.112)

Notes: Figures in the parentheses are t-statistics, except for Breusch-Pagan LM test, F-test, Hausman test, Heteroskedasticity, Serial Correlation, Ramsey RESET, and Durbin-Wu-Hausman which are p-values. *, ** and *** denote 10%, 5%, and 1% level of significance, respectively.

Furthermore, the analysis proceeds with the Ramsey RESET test (test of omitted variables) and Durbin Wu-Hausman (tests of endogeneity). The results reveal that the p-

value of the tests are more than 0.05, then there is no evidence of functional form misspecification and the variables are exogenous (see Appendix W and Appendix FF).

The results of the robust fixed effects model in Table 5.5 present that young female workers and senior female workers have a positive impact on economic growth. However, the findings indicate that middle-aged female workers have insignificant impact on economic growth. This may be due to the fact that the Middle East has a low rate of female labour force participation (World Bank (2019)). Labour force participation rate, growth rate of capital stock, education expenditures, trade openness, and regulatory quality have no effect on economic growth since the coefficients are insignificant.

5.4.4 Discussion of Findings - Composition of Working Age Population

The study has found a positive relationship between the working-age population and economic growth in the Middle East. Demographic dividend refers to an increase in economic growth that may occur because of a decrease in a country's mortality and fertility rates, as well as the resulting shift in the age structure of the country's population portfolio. Age structural transition is the process of changing the age structure of a population from a youthful to an elderly age structure. It is an important component of the demographic transition process. The nature of the shifting age structure of the population throughout the demographic transition has a variety of social and economic ramifications for society and the economy. As a result, a decrease in the dependence ratio and a rise in the working-age population during the age structural transition may be considered a demographic benefit.

China's demographic age structure and economic development were investigated by Zhang et al., (2014), who discovered that shifts in the working-age population's size and internal demographic composition because of changes in the age structure are significantly correlated with changes in provincial economic growth rates. It was also

discovered that changes in the internal demographic composition of the working-age population account for approximately one-fifth of the increase in GDP per capita, with more than half of this growth attributed to shifts in the age structure of the population in working age. Bloom & Williamson, (1998) investigated the impact of changes in age structure on economic development in East Asian countries by using cross-country regressions in their research. Their research revealed that a rising ratio of working-age people to the overall population improves the ratio of producers to consumers, resulting in possibilities for business expansion and expansion of employment.

When we look at the working-age population in the Middle East, it contributes more than two-thirds of the total population of the region. As predicted, it has a relation with economic growth. In fact, economic growth is positively associated with the share of the working-age population as the working-age population is the major source of the labour force. Based on empirical evidence obtained through the analysis of data, it can be concluded that the working-age population is one of the most important determining factors of the economic growth of the Middle East.

The economic growth of a country depends on the number and efficiency of the working-age population. Working more people increase the savings of the country where there would be an increase in investments. On the other hand, working more people means a smaller number of dependents are there in the economy. Moreover, working more people improves the infrastructure for education and that will ultimately lead to improving the quality of the labour force of the world in the future.

There are several results from this study worthy of discussion. The first important significant finding that emerged from this study is that working-age population composition by age group (young workers, middle-aged workers, and senior workers) induces increased economic growth in the Middle East. This result is consistent with the

findings of Bloom and Williamson (1998), Oliver (2015), Zhang et al. (2015), and Wongboonsin and Phiromswad (2017) who revealed that there is a positive correlation between the share of the working-age population and economic growth.

Middle East countries experienced remarkable changes in their age structure during the study period 1996–2018, featuring increases in the working-age population (from 0.63 to 0.73). Table 5.3 illustrates the contribution of demographic change in working-age population to the economic growth based on the coefficients of the robust fixed effects model in the last column. The results suggest that an increase of 1% in the share of young workers, middle-aged workers and senior workers, per capita GDP is expected to increase by 2.8%, 2.4% and 6.9%, respectively. The analysis proved that working age population composition has a pronounced impact on economic growth. The increasing proportion of the working age population out of the entire population offers opportunity to the countries and is acknowledged as demographic dividend. Nevertheless, economic performance does not purely depend on demographic dividend, and in addition, there exists a requirement for suitable mechanisms to exploit this demographic dividend.

The extensive proportion of working age population can augment capital and multiply the national per capita income. A country will undergo a stimulated increase in the economy when comparatively huge portions of the cohort hit the age that is considered prime for working and saving. This is due to a heightened participatory rate that raises the vitality of the labour force, with great levels of skilled workers that develop an economy to possess greater adaptability, in addition to the capacity to react ably to the shifting economic trends. While the demographic shifts ensue at a greater pace, it may be anticipated that these shifts are liable to possess a greater effect on the economic performance of countries in the forthcoming times.

Rationally, the economic performance of a country should be impacted by the age composition of its population. A country possessing a youthful population will exhibit greater productivity in comparison to a country with an older age composition, as it will possess a greater workforce in comparison to the population size. Greater number of workers generates greater quantity of products and services. Thus, countries with younger age composition ratio have the inclination to develop swifter in terms of the economy in comparison to countries with higher percentage of older age composition. An overall deficit in economic vitality elucidates the reason why advanced economies possessing ageing populations are worried about population ageing. It also assists in illuminating the reason why certain economies have emerged to be more receptive to immigration movements in the recent last few years. The current shift of economic power at the global level from the advanced economies to the developing nations to a certain level manifests the variations in terms of demography between the both.

The general belief is that when a declining fertility rate falls behind the declining infant mortality, the young and old dependent populations decrease relative to the working-age population. Consequently, a growing proportion of the population that constitutes the working age population demonstrates an expansion in per capita income growth. This occurrence is deemed as demographic dividend that can be a driver of economic growth, as such was the instance in East Asia throughout the years of extremely high growth ranging from the 1970s and 1980s. Furthermore, in a study by Bloom et al. (2000), it was declared that this demographic dividend is credited for nearly one third of the swift growth in East Asia ranging from the years 1965 up to 1990. Specifically, they discovered that economic start-ups in India and China took significant advantage from changes in their demographic composition.

The second discussion point relates to the results indicating that the senior workers contributed more to the economic growth compared to young workers and middle-aged workers in the three specifications (both sexes, male and female). This is because senior workers have accumulated experience and knowledge. Lengthier lifespan accrues experience that raises productivity. A report from the World Health Organization (2002) revealed that older workers possess amassed experience, which in turn is considered as a significant factor of human capital that enhances their productivity. In addition, Dalen et al. (2010) reported that older workers are considered to have better social skills and to be more reliable, more accurate, and more committed to their work. This result is in line with the study by Oliver (2015) that found that change in the 55-59 age group is most positively associated with real GDP per capita growth in Japan.

The third discussion point relates to the results indicating that the male working-age population composition (young male workers, middle-aged male workers, and senior male workers) are highly positively related to the economic growth compared to the female working-age population composition (young female workers, middle-aged female workers, and senior female workers). This may be because the value of the contribution of the male working-age population to the economy on average higher than the female working-age population contribution. In the Middle East, women participate in labour market at lower rates than men. This is because women often face greater obstacles to becoming participators in labour market and greater time constraints due to care responsibilities. In addition, female labour force participation in the Middle East has slightly increased over the years, but they work in less prestigious jobs, are paid less and have fewer opportunities for advancement.

The fourth discussion point relates to the results indicating that the middle-aged female workers have a positive and insignificant impact on economic growth. This is maybe

because female workers do not contribute much to the economy in terms of the value of contribution, because the kind of jobs they are doing only have little value of contribution. Moreover, this may be because marriage, childbearing and household responsibilities explain, in part, low female labour force participation, resulting in low contribution in economic growth.

In nations across the Middle East, caregiving is regarded to be the primary duty of women, and it is given great priority over their involvement in the productive labour market. As a result, women's labour force participation is much lower than that of males, who are expected to provide financial support for their families as well. Despite the fact that women's domestic work often prevents them from entering the paid labour market, women who are working do not reduce their domestic work. According to the Egyptian labour market study, women work an average of 30.25 hours per week in home and care labour, while males work an average of 4.19 hours per week in the same occupation. A goal of the Sustainable Development Goals is to recognise and value unpaid care and domestic labour by providing public services, infrastructure, and encouraging shared responsibility among members of a home or family. Unpaid care work is one of the Sustainable Development Goals. It is also seen as a necessary precondition for the achievement of the Sustainable Development Goals, which address issues such as gender equality, poverty reduction, addressing inequality, and sustainable development via decent employment, among others.

Throughout the Middle East region, state-sponsored education programmes and the development of public service sectors have made it easier for women to participate in the labour market. These initiatives have opened the door to women working in government positions. Women's involvement in the labour force in the Middle East, on the other hand, continues at a low level. According to the literature, there is a slew of variables that

interact and contribute to women's low labour force participation rates in the Middle East area. Modernization, gender roles, educational achievement, and access to opportunities are just a few of the issues that need to be addressed. When it comes to unpaid labour, the gender gap in Middle Eastern nations is heavily influenced by economic trends, one of which is linked to regional economic migration of men to oil-producing countries in order to work and send remittances to their families. It is also because of high-paying professions that women are frequently unable to work to support their families that economies in oil-producing nations have tended to be more male-oriented in nature. Aside from that, women living in the Middle East area continue to be hindered by their restricted mobility, and they do not have equitable access to creative and entrepreneurial possibilities. Also in the Middle East area, there is evidence that, once girls enter puberty, societal conventions surrounding their duties and position in a community severely restrict their access to educational possibilities.

Overall, in the Middle East countries under study the working age cohort represents a 61 to 85 per cent share of the population. They can therefore benefit from the demographic dividend which drives higher economic growth. The demographic dividend prospects are not constantly brought to actualization, where economic growth is not a consequential result of shifts in the population age composition. According to Bloom and Canning (2004), a huge working-age population needs a suitable request for labour as a conditional circumstance for the demographic dividend to be experienced. In the absence of suitable policies, the surplus labour supply may lead to unemployment or underemployment, resulting in political volatility, higher crime rates, and the decline of social capital as the plausible consequence. It is crucial that prospects are developed for the increasing working-age population via deepening and advancing financial markets, enhancing prospects for local entrepreneurship, in addition to drawing in foreign direct investments. The degree in which such policies are implemented explain why certain newly emerging

economies advantaged significantly in economic growth derived from the demographic transition, whereas others were unsuccessful.

5.4.5 Empirical Results – Population Ageing

This study uses two different measures of population ageing namely population aged 65 and over and old dependency ratio to investigate their impacts on economic growth. Table 5.6 presents the results of the effect of population aged 65 and over on economic growth. The Breusch-pagan LM test favours the random effects model to the pooled OLS technique as the model is considered more appropriate as the p-value for the estimated test statistic is less than 0.01. The F-test favours the fixed effects model since the p-value is less than 0.01. In addition, the Hausman test reveals that the fixed effects model is better than the random effects because the p-value is less than 0.01 (see Appendix F).

The following step is to run diagnostic tests. The result of the variance inflation factor (VIF) shows that the mean VIF is less than 10 (see Appendix O). This denotes that multicollinearity is not a problem. In addition, the results display that the null hypotheses are rejected (p-value less than 0.01) for both the heteroscedasticity test and autocorrelation test. This indicates that there are heteroskedasticity and autocorrelation problems.

For further analysis, since the fixed effects model is chosen as the most appropriate, the robust random effects model is applied to rectify the heteroskedasticity and autocorrelation problems and to obtain an accurate value for regression standard error. Furthermore, the analysis proceeds with the Ramsey RESET test (test of omitted variables) and Durbin Wu–Hausman (tests of endogeneity). The results reveal that the p-value of the tests are more than 0.05, then there is no evidence of functional form misspecification and the variables are exogenous (see Appendix X and Appendix GG).

Table 5.6: The impact of population aged 65 and over on economic growth

Variables	Pooled OLS	Random Effects	Fixed Effects	Robust Fixed effects Model
Population aged 65 and over	-0.10 (-3.06) ***	0.46 (13.38) ***	0.55 (18.92) ***	0.55 (16.62) ***
Growth rate of population	-0.01 (-0.98)	0.01 (2.54) **	0.01 (3.08) ***	0.01 (4.09) ***
Labour force participation rate	0.06 (14.14) ***	0.03 (7.45) ***	0.02 (7.16) ***	0.02 (3.02) **
Growth rate of capital stock	0.01 (0.88)	-0.01 (-0.35)	-0.01 (-1.57)	-0.01 (-0.59)
Education expenditures	0.09 (3.58) ***	-0.05 (-3.12) ***	-0.05 (-3.87) ***	-0.05 (-2.51) **
Trade openness	-0.01 (-3.22) ***	0.01 (0.38)	-0.01 (-0.02)	-0.01 (-0.01)
Foreign direct investment	-0.01 (-0.24)	0.01 (0.71)	0.01 (0.86)	0.01 (0.46)
Constant	7.13 (17.17) ***	7.30 (24.25) ***	7.30 (34.85) ***	7.30 (15.28) ***
Breusch-Pagan LM test	404.81 (0.000) ***			
F-test (fixed effects)			212.46 (0.000) ***	
Hausman test			71.61 (0.000) ***	
R-squared	0.81	0.67	0.70	0.70
Observations	201	201	201	201
Multicollinearity (Mean VIF)	2.50			
Heteroskedasticity (χ^2 - stat)			329.72 (0.000) ***	
Serial Correlation (F-stat)			108.031 (0.000) ***	
Ramsey RESET test (Omitted variables)				3.21 (0.076)
Durbin				2.105 (0.147)
Wu-Hausman (Endogeneity tests)				2.029 (0.156)

Notes: Figures in the parentheses are t-statistics, except for Breusch-Pagan LM test, F-test, Hausman test, Heteroskedasticity, Serial Correlation, Ramsey RESET, and Durbin-Wu-Hausman which are p-values. *, ** and *** denote 10%, 5%, and 1% level of significance, respectively.

The robust fixed effects findings in Table 5.6 show that the population aged 65 and over has a positive effect on economic growth. The finding supports the theoretical proposition by Prettnner et al. (2013) that an ageing population does not necessarily adversely affects macroeconomic growth in the developing countries as it does in the developed countries. In other words, changes in the population age structure as a result of the transition to an older population may encourage more investment in human capital,

which would have a beneficial effect on per capita growth. Workers have the chance to prolong their working lives as life expectancy rises, allowing them to further acquire relevant skills that may help them advance in their careers.

These empirical research findings support the hypothesis that an ageing population is not detrimental to economic growth in the Middle East. The mechanisms through which the positive effect can take place are savings behaviour and human capital accumulation of the individuals. This is probably because the Middle East's ageing degree is not deep. The population aged 65 years and older in Middle East countries is less than 10% of the total population and this ratio is not yet large to affect economic growth negatively.

The results reveal that the growth rate of the population and labour force participation rate positively and significantly influence economic growth, establishing the optimist's approach, which states that the rate of population growth positively affects the growth of the economy. The positive sign in the case of the Middle East can be explained by the rising ratios of primary and secondary school enrolment in the region, thus leading to a greater proportion of educated workforce when entering the working age.

Regarding education expenditure, the results report that government education expenditure has negative effect on economic growth. The negative sign might be due to the allocated funds for education sector development not being properly utilized (Nurudeen & Usman, 2010). In the study by Heyneman (1997), it was shown that the main reason behind the low-quality education in the Middle East and North Africa is not a scarcity of monetary resources but the inefficiency of managing the resources already allocated. The results show that growth rate of capital stock, trade openness and foreign direct investment have no effect on economic growth.

Table 5.7 presents the estimation results of the three alternative models for the impact of old-age dependency ratio on economic growth. The Breusch-Pagan LM test, F-test, and Hausman test statistics are displayed in the same table. The Breusch-Pagan LM test selected the random effects over the pooled OLS as the probability value for the LM test is lower than 0.01, whereas the F-test selected the fixed effect model for the same reason. Thus, the next step involves the selection between the random and fixed effects models using Hausman test, of which the results were inclined towards the fixed effects model's superior specifications over the random effects specification as p-value in Hausman test remained lower than 0.0 (see Appendix G). Then, the analysis will proceed with the diagnostic tests. The mean VIF is lower than 10, which indicates the absence of multicollinearity issue (see Appendix P). The results show that null hypotheses are rejected (probability values are lower than 0.01), for the tests of heteroskedasticity and autocorrelation. This indicates that there are a heteroskedasticity and autocorrelation problems. Therefore, the fixed effects model with robust standard errors is used to rectify the heteroskedasticity and autocorrelation problems. Furthermore, the analysis proceeds with the Ramsey RESET test (test of omitted variables) and Durbin Wu-Hausman (tests of endogeneity). The results reveal that the p-value of the tests are more than 0.05, then there is no evidence of functional form misspecification and the variables are exogenous (see Appendix Y and Appendix HH).

Table 5.7: The impact of old-age dependency ratio on economic growth

Variables	Pooled OLS	Random Effects	Fixed Effects	Robust Fixed effects Model
Old-age dependency ratio	-13.69 (-6.75) ***	14.16 (4.06) ***	30.26 (8.44) ***	30.26 (2.30) **
Growth rate of population	-0.02 (-1.74) *	0.01 (1.87) *	0.02 (2.63) ***	0.02 (2.81) **
Labour force participation rate	0.05 (11.99) ***	0.03 (6.13) ***	0.03 (5.81) ***	0.03 (2.24) **
Growth rate of capital stock	0.01 (1.23)	0.01 (0.55)	-0.01 (-0.84)	-0.01 (-0.39)
Education expenditures	0.05 (2.16) **	-0.05 (-2.33) **	-0.06 (-3.20) ***	-0.06 (-1.89) *
Trade openness	-0.01 (-5.15) ***	0.01 0.98	0.01 (1.49)	0.01 (0.73)
Foreign direct investment	0.01 (0.34)	0.01 0.77	0.01 (0.70)	0.01 (0.42)
Constant	8.38 (20.96) ***	7.71 (17.84) ***	7.18 (19.49) ***	7.18 (5.30) ***
Breusch-Pagan LM test	338.18 (0.000) ***			
F-test (fixed effects)	72.58 (0.000) ***			
Hausman test	55.75 (0.000) ***			
R-squared	0.84	0.26	0.36	0.36
Observations	201	201	201	201
Multicollinearity (Mean VIF)	2.64			
Heteroskedasticity (χ^2 - stat)	891.24 (0.000) ***			
Serial Correlation (F-stat)	165.991 (0.000) ***			
Ramsey RESET test (Omitted variables)	1.11 (0.3704)			
Durbin	1.082 (0.298)			
Wu-Hausman (Endogeneity tests)	1.037 (0.309)			

Notes: Figures in the parentheses are t-statistics, except for Breusch-Pagan LM test, F-test, Hausman test, Heteroskedasticity, Serial Correlation, Ramsey RESET, and Durbin-Wu-Hausman which are p-values. *, ** and *** denote 10%, 5%, and 1% level of significance, respectively.

Table 5.7 tabulates the robust fixed effects model's results and from the table, it is evident that the old-age dependency ratio has a positive effect on economic growth. This result is in line with many studies that found a positive impact of old-age dependency ratio on economic growth. In the study by Herzog (2011) showed a positive relationship between economic growth and old-age dependency ratio. He attributed this finding to an increase in consumption upon retirement that counteracts the loss in initial productive

capacity that is actualized by a smaller workforce. According to Fukuda and Morozumi (2004), through increasing the saving rates of the working-age population, a rise in the elderly dependency rate may enhance economic growth if the savings are efficiently invested for domestic capital accumulation. In China, Li and Zhang (2015), together with Ruidong (2018), showed that dependency ratio has a positive effect on GDP in China. It is probably because the growth rate of per capita GDP is far greater than the growth rate of the elderly in the total population.

The results reveal that the growth rate of the population and labour force participation rate coefficients were positive and significant while education expenditures coefficient was negative and significant.

5.4.6 Discussion of Findings – Population Ageing

The phase during which the dependency ratio drops is termed as “the window of opportunity” during which time a demographic dividend may come to fruition due to composition of the community which has a mounting number of prospective producers in relation to the number of consumers. Nevertheless, as the fertility levels persist to decrease, the dependency percentages in due course rise due to the initiation of the decrease in the percentage of the working age cohort, and the percentage of older persons rise persistence. While populations undergo ageing, the rise in old-age dependency percentages indicates additional burdens that social security and public health systems have to endure.

Numerous researchers such as Fang and Wang (2005), Kelley and Schmidt (1995), and Wei and Hao (2010) have addressed the dependency ratio as a main variable in their economic growth studies. The inference is that a greater working age population results in a lesser dependency ratio. A smaller dependency ratio shows that there is a greater ratio of workers per capita, and thus a bigger workforce supply in the economy. It also suggests

that there are smaller number of dependents due to the working age group, who are obligated to provide for their dependents, allowing for the prospect's accrual of greater amount of savings for the productive investment in the economy. A lower dependency ratio increases savings, and the movement of savings into investment establishes the capital, and capital then results in a more extensive economic growth.

More specifically, a comprehensive explanation on the positive relationship between the population ageing and economic growth in the Middle Eastern countries are forwarded in this section. The result validates the theoretical proposition by Prettnner et al. (2013) pertaining to an ageing population, which does not inevitably impact the macroeconomic growth of developing countries in a detrimental manner. Stated differently, shifts in the population age composition that is leaning towards an ageing population could boost greater human capital investment and positive effect on the per capita growth. With the increase in life expectancy, workers possess a potential to expand their working life, in addition to accrue additional pertinent skills that can promote enhanced growth.

These empirical research outcomes validate the premise that an ageing population does not adversely impact on the economic growth in the Middle Eastern countries. The mechanisms through which the effect can take place are savings behaviour and human capital accumulation of the individuals. The result is also consistent with the findings revealed in empirical studies done recently by Blake and Mayhew (2006), Cai (2010), and Li et al. (2012), which suggested the positive or neutral impacts of an ageing population on the economic performance. In the context of China, by employing Solow's model, Li and Zhang (2015) investigated the impact of ageing population on the economy in China for the duration ranging from the years between 1978 up to 2012, and they discovered a positive impact on the per capita GDP. In another similar study by Li et al.

(2012), they discovered a positive impact of an ageing population towards savings and investment, which leads to augmented economic growth, by using the Chinese provincial panel data for the years ranging between 1985 up to 2005. Also, Cannari (1994) and Börsch-Supan (1995) revealed either weak or positive impacts of an ageing population on private savings respectively. Additional studies by other researchers such as executed by Göbel and Zwick (2012) in a German metal manufacturing and service sectors had employed data for a duration of years ranging between 1997 up to 2005, and had utilized generalized method of moments (GMM) to be the estimation approach. The researchers discovered there is no significant impact of an ageing population who were aged between 55-60 years old on the productivity in the two sectors. Furthermore, with regards to Bangladesh, Mamun et al. (2020) discovered the positive effect of ageing population on the per capita real GDP in Bangladesh in the long-term length of time. This may be attributed to the growing capital formation process in the economy.

Based on a study by Hajamini (2015), the dependency ratio of the aged old has a positive impact on the per capita income. The findings can be attributed to the second demographic dividend when the greater part of a population comprises of older working ages cohort and of the people who are coping with a prolonged duration of retirement (when the life expectancy is lengthier), they are extremely driven to accrue assets. Numerous empirical studies have reported that higher capital accumulation can counterbalance the adverse impacts of an ageing population. In these circumstances, the impacts of a second demographic dividend are more superior and of greater durability.

Consequently, the prevalent theoretical hypothesis – that there will occur a decline in growth and development along with ageing population – is not valid for a developing country such as the Middle Eastern countries. This varying result may be due to the Middle East data and econometric methods that are dissimilar from past studies in this

research. For example, the augmented Neoclassical growth model was employed and where capital stock is utilized as an explanatory variable in this study. The growing capital formation has the possibility to escalate labour productivity of the working age population and replace the declining economic contribution of the ageing population. In the Middle Eastern countries, the family is fundamentally responsible for the care of the aged population. Within the traditional joint family system, it is customary for the aged people to experience support, deference and a decent life. Even though, the situations are currently shifting, the greater part of population still live in a joint family setting. Moreover, government support (like old age allowances) provision for the aged is not a lot. Hence, alongside the growing ageing population, a substantial rise in government expenditure is improbable. Thus, it is improbable for an ageing population to affect the macroeconomic growth adversely.

Moving on to the old-age dependency ratio, it has a positive impact on the economic growth in this study and this could be due to several reasons; firstly, currently, Middle East's ageing degree is not deep. The old-age dependency ratio is low with less than 10% in most Middle East countries. A long period of time will be needed to be at par with presently developed countries. At the beginning phase of the aged society, there is usually a positive relationship of ageing with economic growth (Li and Zhang, 2015). Secondly, the aged possess savings. Through a longer duration of work, they can save for their retirement. If they have adequate savings for their old age, they will not be dependents. Numerous past studies indicated that an increase in old-age dependency ratio will lead to a rise in the savings rate, which indicates that ageing will not decrease savings all the time.

According to United Nations Population Fund (2017), the population aged above 60 years in the Middle East countries have made savings ranging from the lowest 18.6

percent in Jordan and the highest 19.8 percent in Egypt to the greatest 66.7 percent in Kuwait and the highest 75 percent in the United Arab Emirates. 40% to 60% of individuals aged 60 to 79 were able to save in certain middle-income nations. For those who have accounts with a financial institution, in the GCC countries where the banking system is developed, more than 80 percent of those aged 60-79 have an account with a financial institution: 88.6 percent in Bahrain, 78.9 percent in Saudi Arabia, 86.7 percent in United Arab Emirates, and 91.4 percent in Kuwait. In middle-income nations, the percentage of people who hold their own accounts in financial institutions varies between 30 and 40 percent in the remainder of the middle-income countries (30.9 percent in Egypt and 32.6 percent in Jordan).

An alternative reason for the positive impact of ageing population on economic growth is probably because of the weak public pension schemes in the Middle East, so older people are therefore forced to continue working. In the Middle East, employees in the public sector may expect to retire at the age of 60 to 62 on average. For those working in the private sector, however, there is no mandatory retirement age, enabling workers to continue working long into their 60s and 70s and beyond. People's expectations for retirement are being forced to alter because of the changes in the retirement environment. Individuals in their working years believe that things are changing so rapidly that their retirement plans will no longer be relevant by the time they reach retirement age, which is a source of concern for many people in their working years. Due to these considerations, most working-age individuals will continue working at least in part throughout their retirement. They would be willing to delay their retirement for two years or more to have a higher retirement income, or they would be prepared to take on a second job in order to keep their retirement savings going.

Regarding the social protection systems in the Middle East, all countries in the region exhibits significant disparities in the provision of social protection for the aged, and this is true across the board. Their public pension systems, the majority of which have significant budgets (2–5 percent of GDP) and provide relatively high payouts to their recipients, in some cases nearly equivalent to their final salary/wage after 40 years of payments (Lustig, 2016).

These advantages, on the other hand, are very unequally dispersed across the population. The payments received by certain socioeconomic groups are adequate, while those received by others are much less so, and the vast majority of people in the Middle East still have no access to any of these state pension systems. This is especially true for individuals who work in the informal economy for lesser wages. They are particularly vulnerable. A consequence of this is that the vast majority of public pension plans in the Middle East have only a small effect on income poverty, and in certain cases may even contribute to income disparity in some nations. Furthermore, public pension systems in the area suffer from significant inefficiencies and incapacity in terms of efficiency and sustainability. Considering that Middle Eastern cultures are ageing—that is, the proportion of individuals over 65 is rising at an alarming rate—and that conventional systems of social security are being phased out, these results are especially alarming and need more investigation.

In addition to one or more contributory social insurance systems, the majority of Middle Eastern nations now have a non-contributory pension programme in place. However, only a small number of the non-contributory plans are intended for low-income individuals. Instead, they provide coverage for members of the military forces, civil officials, and other public sector workers, while contributory programmes provide coverage for members of the private sector. Informal employees, such as temporary and

domestic workers and those who are self-employed, are excluded from this category in the majority of nations in the area, while employees in agriculture are excluded in certain cases.

In terms of policy, suitable policies should be established and enforced to develop a productive workforce through extensive education and training, in which case, the elderly individuals are viewed as a source of skilled talents who are able to work for an extended duration of time. This will enable countries to be recipients of the optimal value of older workers who have the tendency to possess extensive experience and knowledge. Nations may equally improve the stimulation impacts of ageing on the economic growth with the assistance of policy direction, in addition to coping with population ageing in the forthcoming times via reforms in the tax revenue and social security system structure, as well deriving the maximum advantage of human resources.

5.5 Chapter Summary

In examining the links between demographic change and economic growth, five specifications were adapted from the neoclassical growth models. In this context, the empirical specifications define links between working-age population composition, population ageing and economic growth, with additional specification on age and gender. The empirical analysis examines and estimates the relationships between the variables described earlier for the period from 1996 to 2018 using static linear panel data models.

In this chapter, the focus of discussion is based on the effects of demographic change in enhancing economic growth. The findings of the first part of this chapter explain that demographic changes, as reflected by internal demographic composition of the working-age population, positively influence economic growth in the Middle East. In terms of gender, the results show that the male working-age population composition is highly positively related to the economic growth compared to the female working-age

population composition. Based on the results, a huge surge in the young population in the Middle East, as a demographic force, offers a historic opportunity that countries must seize. The opportunity to get benefits due to a change in age-structure is not forever and the ageing population will ultimately constrain economic growth. The second part in this chapter examines the effects of population ageing on economic growth in Middle East countries. The findings indicate that population aged 65 and over and old-age dependency ratio positively affect economic growth.

In general, Middle East region is now confronted with a rapidly declining fertility. As demographic changes occur more rapidly, it can be expected that these changes might have a bigger impact on countries' economic performance in the future. The high ratio of the working age population to dependents can lead to high capital and in turn, result in an increased national per capita. In case a significant proportion of generations achieve prime working-age population and saving-age population, this may result in a prompted increase in economic growth through induced demographic means. This is attributed to the fact that greater level of participation in the work-force results in intensified labour market dynamism, and enhanced levels of skilled labour. Consequently, this will lead to a more flexible economy, in addition to an enhanced capability of responding to shifts in the economic trends. Nevertheless, the demographic changes of these types do not automatically generate dividends payment and for the benefits to arise, it is a must for countries to inject investments in education for the training of the future cohort of workforce successor, in addition to managing their economies to promote stable situations and appropriate jobs for them.

The major notion that had circulated amongst the economists and demographers in the past decades pertained to population growth, which on its own possesses various impacts on the economic growth. Nevertheless, what is significant is not the population growth

on its own, but it is in the changes and transitions in the age composition of the population – such changes simply develop the prospects for economic growth.

Universiti Malaya

CHAPTER 6: EDUCATION LEVELS AND ECONOMIC GROWTH

6.1 Introduction

This chapter presents the empirical specifications and findings for the empirical models on education level and economic growth in the Middle East. This chapter examines the empirical estimations of the extended education models that includes the total effects and the gender effects of different education levels –primary, secondary, and tertiary – on economic growth. Applying the augmented Neoclassical growth model, the effect of education levels on economic growth is examined through the empirical specifications and findings for the three empirical models. The first baseline empirical model examines the impact of all three levels of education on economic growth in the Middle East countries. In the second and third models, the education levels are disaggregated by gender (male and female) to investigate their effects on economic growth. The second model contains the male education levels, and the third model includes the female education levels. The models are estimated using the static panel data models –pooled OLS, random effects, and fixed effects– for ten Middle East countries during the period from 1996 to 2018.

6.2 Overview of Gross Enrolment Ratio

The UNESCO definition of the gross enrolment ratio is the number of students who enrol in each level of education regardless of age divided by the population of the age group that corresponds to the given level of education. In some cases, the enrolment ratio can exceed 100%, which means that it includes the enrolment of students outside the appropriate age level.

This section analyses the evolution of the gross enrolment ratio in the three education levels. In the primary level, the gross enrolment ratio in the Middle East countries increased by 7.70% between 1996 and 2018. This performance, however, hides

disparities between countries (Figure 6.1). For some countries, the primary enrolment ratio rose more than the average. This is essentially the case for Saudi Arabia, Oman, Egypt, and Qatar, where the primary enrolment ratio increased by 76% to 100%, from 88% to 103%, from 95% to 106%, and 95% to 104% respectively. Other countries saw their enrolment ratio rise less than the average. For example, in the United Arab Emirates, the ratio rose from 103% in 1996 to 108% in 2018. The enrolment ratio of Iran increased from 105% to 110% during the same period. Meanwhile, other countries – Bahrain, Jordan, Kuwait, and Turkey – saw their enrolment ratio decrease during the period 1996-2018.

Regarding secondary education, the gross enrolment ratio in the Middle East countries increased by 22.33% between 1996 and 2018. The performance of each country was different. The four countries that recorded the lowest ratio of enrolment in secondary education in 1996 were Turkey with 56% of the gross enrolment ratio, Saudi Arabia with 61%, Oman with 68%, and Egypt with 69%. In 2018, the enrolment ratio for secondary education was highest in Saudi Arabia with 110%, followed by UAE and Turkey with 109% and 107%, respectively. For tertiary education, the gross enrolment ratio in the Middle East countries rose by 176% between 1996 and 2018. When analysing the enrolment ratio for tertiary education, Kuwait and Qatar were the only countries whose enrolment ratio reached 24% in 1996. By 2018, the situation had greatly improved. However, the improvement is still considered to be insufficient, especially in some countries like Qatar, Jordan, and Egypt. The countries with the largest enrolment ratio were Turkey, Saudi Arabia, and Iran with, respectively, 95%, 68%, and 67% (Figure 6.1).

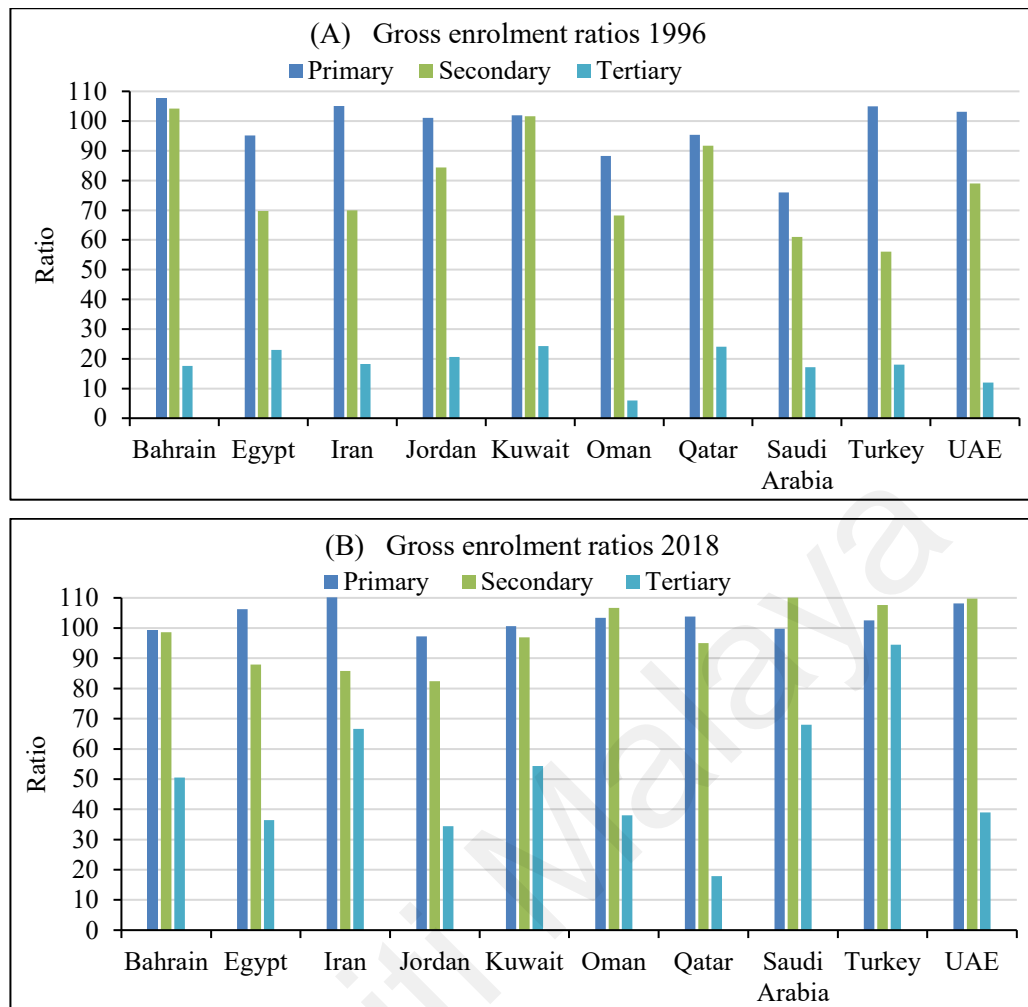


Figure 6.1: Gross enrolment ratio by country, 1996 and 2018

Source: World Bank (2020).

Figure 6.2 shows the gross enrolment ratio for the education levels in the Middle East countries from 1996 to 2018. Overall, the gross enrolment ratio for all levels of education has increased over the years. This figure clearly shows that there is a small disparity between the primary and secondary enrolment ratio. Meanwhile, there is a significant disparity between the secondary and tertiary enrolment ratio. The difference has remained constant during the period. This indicates that tertiary education is substantially lagging other education levels in the Middle East countries.

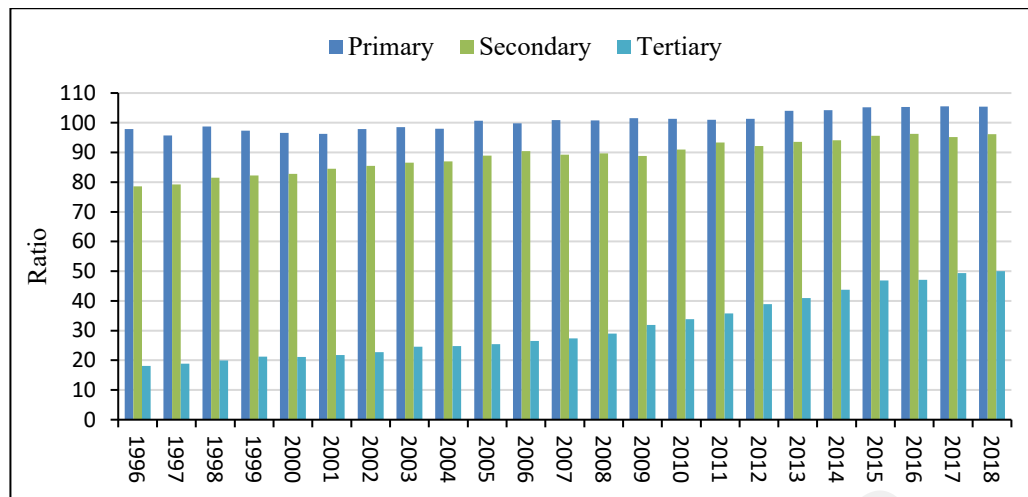


Figure 6.2: Gross enrolment ratio in the Middle East, 1996-2018

Source: World Bank (2020).

Education is a key factor towards the attainment of well-being and is utilized in the gauging of the economic development, and in the quality of life, that entails the core aspect in ascertaining the degree of development that a country has reached, such as it being a developed, developing, or an underdeveloped country. According to UNDP (2018), the education index was gauged through the combination of average adult years of schooling with the required years of schooling for children, for which each receive 50% weighting.

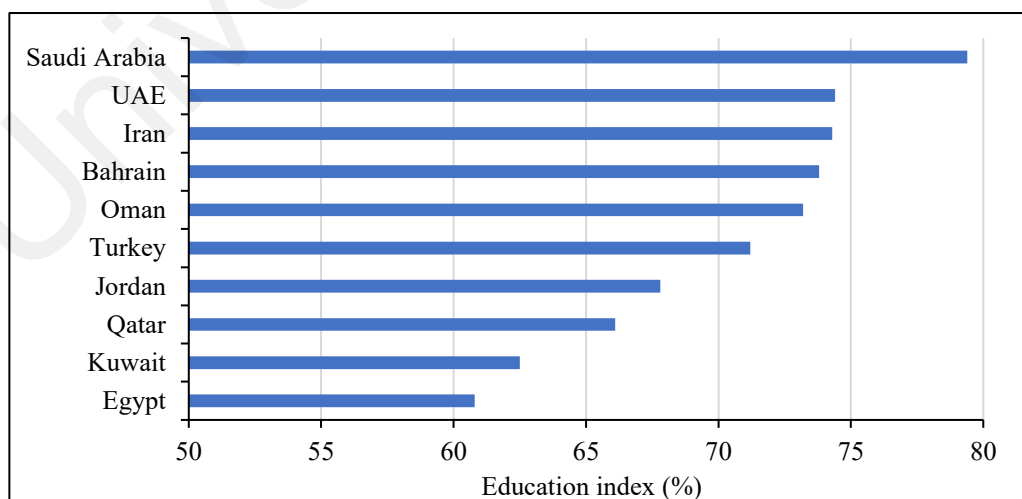


Figure 6.3: Education index by country, 2018

Source: UNDP (2018).

Figure 6.3 shows the education index in the Middle East countries. Education index in 2018 was highest in Saudi Arabia with 79.4%, followed by UAE and Iran with 74.4% and 74.3%, respectively. The four countries that recorded the lowest education index in 2018 were Egypt with 60.8% of the education index, Kuwait with 62.5%, Qatar with 66.1%, and Jordan with 67.8%.

6.3 Descriptive Statistics

Table 6.1 reports the descriptive statistics of the variables used in the regression analysis. The real GDP per capita (in logs) indicates a minimum of 8.48 and the maximum of 11.77, with an average of 10.23. Gross enrolment ratio for primary school indicates a minimum of 67% and the maximum being 118.4%. Gross enrolment ratio for secondary school shows a minimum of 56% and the maximum of 110.46%. The ratio for tertiary school enrolment indicates the presence of gaps between the minimum and maximum ratios in countries, with a minimum of 6.02% and the maximum of 94.73%. The figure for education expenditures also shows the gaps between the minimum and maximum government expenditure values in countries, with a minimum of 1% and the maximum of 8.33%.

Table 6.1: Descriptive statistics for education levels model

Variables	Observations	Mean	St. Dev.	Min.	Max.
Real GDP per capita	206	10.23	0.94	8.48	11.77
Primary enrolment	210	100.13	8.67	67	118.4
Secondary enrolment	210	88.14	10.75	56	110.46
Tertiary enrolment	210	29.55	15.15	6.02	94.73
Expenditure on education	210	4.11	1.42	1	8.33
Population growth	210	3.69	3.04	0.09	16.33
Labour force growth	210	0.05	0.04	-0.04	0.23
Growth rate of capital stock	210	10.57	8.19	-16.64	40.71
Trade openness	205	88.46	37.54	29.23	191.88

Source: Authors' computation from STATA 15.

The countries' population growth average is at 3.69%, with the minimum country population growth being 0.09% and the maximum country population growth of 16.33%.

Labour force growth indicates a minimum negative growth of -0.04% and the maximum growth being 0.23%. Growth rate of capital stock displays a minimum negative value of -16.64% and the maximum being 40.71%. Trade openness, which is the sum of exports and imports of goods and services measured as a share of gross domestic product have the maximum value of 191.88% and average value of 88.46%.

6.4 Empirical Results

6.4.1 Unit Root Test

Table 6.2 shows the results based on the panel unit-root tests – Levin Lin Chu test and ADF-Fisher Chi-square. The results revealed that the tests are statistically significant at 5 significance level. This means that there is no unit root, and that the data are stationary at level. This allows the researcher to run the regressions for analysing the empirical results of this study using static panel data models.

Table 6.2: Panel unit root tests for variables in level for education levels model

Variables	Levin, Lin & Chu	ADF - Fisher Chi-square	Final result
Real GDP per capita	-13.696 (0.000)	29.629 (0.041)	I (0)
Primary enrolment	-1.689 (0.046)	33.927 (0.027)	I (0)
Secondary enrolment	-6.339 (0.000)	74.420 (0.000)	I (0)
Tertiary enrolment	-1.885 (0.030)	58.713 (0.000)	I (0)
Education expenditures	-3.059 (0.001)	58.709 (0.000)	I (0)
Population growth	-2.500 (0.006)	46.536 (0.001)	I (0)
Labour force growth	-3.147 (0.001)	34.661 (0.022)	I (0)
Growth rate of capital stock	-2.509 (0.006)	55.324 (0.000)	I (0)
Trade openness	-5.515 (0.000)	33.321 (0.015)	I (0)

Notes: Values in parentheses refer to the probability of the test statistics. The null hypothesis of Levin, Lin & Chu t-test assumes common unit root process, while the ADF - Fisher Chi-square assumes individual unit root process.

6.4.2 Static Panel Data Models

This study employed static panel data models. The three alternative models of panel data are pooled Ordinary Least Squares (OLS), random effects, and fixed effects, which will be employed to examine the impact of education levels on economic growth.

The empirical estimations are reported in tables as follows: First, Table 6.3 displays the education levels impact on economic growth. Then, Table 6.4 and Table 6.5 provide the impact of education levels disaggregated by gender (male and female) on economic growth. The tables comprise the results of all three model specifications expressed in equations 4.6, 4.7, and 4.8.

6.4.3 Empirical Results - Education Levels for Both Sexes

Table 6.3 shows the results of the impact of education levels on economic growth. The Breusch-pagan LM test favours the random effects model to the pooled OLS technique in that the model is more appropriate since the p-value for the estimated test statistic is less than 0.01. The F-test favours the fixed effects model since the p-value is less than 0.01. In addition, the Hausman test reveals that the fixed effects model is better than the random effects because the p-value is less than 0.01 (see Appendix H). The following step is to run diagnostic tests. The result of the variance inflation factor (VIF) shows that the mean VIF is less than 10 (see Appendix Q). This denotes that there is no problem of multicollinearity. Besides, the results display that the null hypotheses are rejected (p-value less than 0.01) for both the heteroscedasticity test and autocorrelation test. This indicates that there are heteroskedasticity and autocorrelation problems. Therefore, the fixed effects model with robust standard errors is used to rectify the heteroskedasticity and autocorrelation problems.

Furthermore, the analysis proceeds with the Ramsey RESET test (test of omitted variables) and Durbin Wu-Hausman (tests of endogeneity). The results reveal that the p-

value of the tests are more than 0.05, then there is no evidence of functional form misspecification and the variables are exogenous (see Appendix Z and Appendix II).

Table 6.3: The impact of education levels on economic growth

Variables	Pooled OLS	Random Effect	Fixed Effect	Robust Fixed Effect Model
Primary enrolment, both sexes	-0.042 (-6.28) ***	-0.008 (-2.46) **	-0.003 (-1.58)	-0.003 (-0.81)
Secondary enrolment, both sexes	0.066 (10.14) ***	0.012 (3.58) ***	0.005 (2.24) **	0.005 (1.90) *
Tertiary enrolment, both sexes	-0.018 (-5.42) ***	0.008 (4.62) ***	0.011 (10.48) ***	0.011 (4.45) ***
Education expenditures	-0.178 (-5.07) ***	-0.081 (-3.62) ***	-0.062 (-4.08) ***	-0.062 (-1.62)
Population growth	0.057 (2.79) ***	0.025 (2.92) ***	0.014 (2.42) **	0.014 (2.00) *
Growth rate of labour force	2.840 (1.90) *	-0.725 (-1.17)	-0.763 (-1.89) *	-0.763 (-2.48) **
Growth rate of capital stock	-0.009 (-1.71) *	-0.001 (-0.22)	-0.001 (-0.03)	-0.001 (-0.01)
Trade openness	-0.003 (-2.16) **	0.002 (1.77) *	-0.001 (-0.07)	-0.001 (-0.04)
Constant	9.884 (17.24) ***	9.883 (36.55) ***	10.022 (59.26) ***	10.022 (51.63) ***
Breusch-Pagan LM test	461.78 (0.000) ***			
F-test (fixed effects)	345.70 (0.000) ***			
Hausman test	115.77 (0.000) ***			
R-squared	0.597	0.535	0.596	0.596
Observations	201	201	201	201
Multicollinearity (Mean VIF)	1.82			
Heteroscedasticity (χ^2 - stat)			476.79 (0.000) ***	
Serial Correlation (F-stat)			161.745 (0.000) ***	
Ramsey RESET test (Omitted variables)				3.63 (0.070)
Durbin Wu-Hausman (Tests of endogeneity)				0.064 (0.801) 0.060 (0.806)

Notes: Figures in the parentheses are t-statistics, except for Breusch-Pagan LM test, F-test, Hausman test, Heteroskedasticity, Serial Correlation, Ramsey RESET, and Durbin-Wu-Hausman which are p-values. *, ** and *** denote 10%, 5%, and 1% level of significance, respectively.

The results of the robust fixed effects model in Table 6.3 showed that primary education has no effect on economic growth. Secondary and tertiary education positively

influence economic growth. The results are similar to that obtained by Awad et al. (2013) who showed that both secondary and tertiary education significantly affected economic growth in Arab countries from 1990 to 2010. Further, based on the research done by Lutz et al. (2008), together with Lee and Kim (2009), secondary and tertiary education were the main determinants of economic growth.

This shows the importance of investing in the education of both sexes and development of their skills as both have potential to contribute to the economy substantially. Although education levels are indispensable to Middle East economies, it is apparent that tertiary education attainment has highest effects on economic growth. This finding corroborates the saying that the importance of tertiary education is obviously undeniable in terms of generating highly skilled workers who drive toward growth and achieving a high-income economy.

The population growth rate affects economic growth positively and significantly, thus confirming the optimist's approach (population growth rate has a positive effect on economic growth). This means that population affects economic growth through increased production, consumption, and savings. Several analysts have found that population growth has a positive and significant relationship with economic development such that a rise in population would lead to a rise in economic development. The growth rate of the labour force has a negative impact on economic growth. This may be due to the unskilled labour force in Middle East countries (Pissarides & Véganzonès-Varoudakis, 2006); and means that unskilled workers do not obtain high productive jobs that promote economic growth. According to Amir et al. (2015), an increase in illiterate labour force has negative impact on economic growth. The result postulated that unqualified and unskilled labour forces retard economic growth in Pakistan. Another possibility is that this result could be as a result of high rate of unemployment in the Middle East countries.

In the study by Orisadare et al. (2018) showed that labour force participation rate has a significant negative effect on economic growth in Nigeria. They reported that this result could be because of high level of unemployment and under-employment rate in the country. Government education expenditure, growth rate of capital stock, and trade openness have no effect on economic growth since the coefficients are insignificant.

6.4.4 Empirical Results - Education Levels Disaggregated by Gender.

Table 6.4 displays the results of the impact of male's education levels on economic growth. The Breusch-pagan LM test favours the random effects model to the pooled OLS technique as the model is considered more appropriate as the p-value for the estimated test statistic is less than 0.01. The F-test favours the fixed effects model since the p-value is less than 0.01. In addition, the Hausman test reveals that the fixed effects model is better than the random effects because the p-value is less than 0.01 (see Appendix I).

The following step is to run diagnostic tests. The result of the variance inflation factor (VIF) shows that the mean VIF is less than 10 (see Appendix R). This denotes that multicollinearity is not a problem. In addition, the results display that the null hypotheses are rejected (p-value less than 0.01) for both the heteroscedasticity test and autocorrelation test. This indicates that there are heteroskedasticity and autocorrelation problems. For further analysis, since the fixed effects model is chosen as the most appropriate, the robust random effects model is applied to rectify the heteroskedasticity and autocorrelation problems and to obtain an accurate value for regression standard error.

Furthermore, the analysis proceeds with the Ramsey RESET test (test of omitted variables) and Durbin Wu–Hausman (tests of endogeneity). The results reveal that the p-value of the tests are more than 0.05, then there is no evidence of functional form misspecification and the variables are exogenous (see Appendix AA and Appendix JJ).

Table 6.4: The impact of male's education levels on economic growth

Variables	Pooled OLS	Random Effect	Fixed Effect	Robust Fixed Effect Model
Primary enrolment, male	-0.030 (-4.58) ***	-0.002 (-0.58)	-0.001 (-0.12)	-0.001 (-0.12)
Secondary enrolment, male	0.044 (8.87) ***	0.001 (0.16)	-0.001 (-0.61)	-0.001 (-0.69)
Tertiary enrolment, male	-0.018 (-5.74) ***	0.013 (10.34) ***	0.014 (13.49) ***	0.014 (5.44) ***
Education expenditures	-0.116 (-3.34) ***	-0.057 (-3.17) ***	-0.052 (-3.41) ***	-0.052 (-1.43)
Population growth	0.066 (3.11) ***	0.023 (3.34) ***	0.019 (3.34) ***	0.019 (3.08) **
Growth rate of labour force	3.099 (2.01) **	-0.685 (-1.40)	-0.703 (-1.71) *	-0.703 (-1.89) *
Growth rate of capital stock	-0.003 (-0.53)	-0.001 (-0.16)	-0.001 (-0.20)	-0.001 (-0.09)
Trade openness	-0.001 (-0.50)	0.002 (1.59)	0.001 (0.69)	0.001 (0.33)
Constant	9.949 (16.92) ***	10.100 (42.64) ***	10.096 (59.51) ***	10.096 (49.36) ***
Breusch-Pagan LM test	352.28 (0.000) ***			
F-test (fixed effects)	355.92 (0.000) ***			
Hausman test	63.78 (0.000) ***			
R-squared	0.573	0.575	0.583	0.583
Observations	201	201	201	201
Multicollinearity (Mean VIF)	1.69			
Heteroscedasticity (χ^2 – stat)			305.57 (0.000) ***	
Serial Correlation (F-stat)			113.186 (0.000) ***	
Ramsey RESET test (Omitted variables)				0.32 (0.811)
Durbin				0.016 (0.810)
Wu–Hausman (Tests of endogeneity)				0.015 (0.903)

Notes: Figures in the parentheses are t-statistics, except for Breusch-Pagan LM test, F-test, Hausman test, Heteroskedasticity, Serial Correlation, Ramsey RESET, and Durbin-Wu–Hausman which are p-values. *, ** and *** denote 10%, 5%, and 1% level of significance, respectively.

The results of the robust random effects model in Table 6.4 shows that male primary education and male secondary education have no effect of on economic growth. Meanwhile, male tertiary education has a positive impact on economic growth; hence, a rise in male tertiary education leads to increase in economic growth. The result suggests

that an increase of 1% in male tertiary education, GDP per capita is expected to increase by 1.4%. The coefficient of population growth rate positively affects economic growth, whereas the coefficient of growth rate of the labour force negatively affects economic growth. Government expenditure on education, growth rate of capital stock, and trade openness have no effect on economic growth since the coefficients are insignificant.

Table 6.5 presents the results of the impact of female's education levels on economic growth. The Breusch-pagan LM test indicates that the random effects model is more appropriate than the pooled OLS technique as the p-value for the estimated test statistic is less than 0.01. The F-test favours the fixed effects model since the p-value is less than 0.01. In addition, the Hausman test reveals that the fixed effects model is better than the random effects because the p-value is less than 0.01 (see Appendix J).

The following step is to run diagnostic tests. The result of the variance inflation factor (VIF) shows that the mean VIF is less than 10 (see Appendix S). This denotes that there is no problem of multicollinearity. Besides, the results display that the null hypotheses are rejected (p-value less than 0.05) for both the heteroscedasticity test and the autocorrelation test. This indicates that there are heteroskedasticity and autocorrelation problems. In further analysis, since the fixed effects model is chosen as appropriate, the robust fixed effects model is applied to rectify the heteroskedasticity and autocorrelation problems and to obtain unbiased standard errors of estimators.

Furthermore, the analysis proceeds with the Ramsey RESET test (test of omitted variables) and Durbin Wu–Hausman (tests of endogeneity). The results reveal that the p-value of the tests are more than 0.05, then there is no evidence of functional form misspecification and the variables are exogenous (see Appendix BB and Appendix KK).

Table 6.5: The impact of female's education levels on economic growth

Variables	Pooled OLS	Random Effect	Fixed Effect	Robust Fixed Effect Model
Primary enrolment, female	-0.044 (-6.92) ***	-0.005 (-2.77) ***	-0.004 (-2.45) **	-0.004 (-1.06)
Secondary enrolment, female	0.065 (10.94) ***	0.011 (4.91) ***	0.009 (4.58) ***	0.009 (2.54) **
Tertiary enrolment, female	-0.005 (-1.38)	0.010 (8.98) ***	0.010 (10.35) ***	0.010 (4.30) ***
Education expenditures	-0.178 (-5.36) ***	-0.090 (-5.67) ***	-0.084 (-5.76) ***	-0.084 (-2.67) **
Population growth	0.047 (2.34) **	0.019 (3.29) ***	0.017 (3.25) ***	0.017 (2.30) **
Growth rate of labour force	3.656 (2.54) **	-0.832 (-2.09) **	-0.843 (-2.32) **	-0.843 (-3.36) ***
Growth rate of capital stock	-0.011 (-2.08) **	-0.001 (-0.38)	-0.001 (-0.26)	-0.001 (-0.14)
Trade openness	-0.003 (-2.47) **	-0.001 (-0.62)	-0.001 (-1.30)	-0.001 (-0.73)
Constant	9.964 (19.62) ***	9.940 (48.54) ***	9.935 (68.83) ***	9.935 (36.58) ***
Breusch-Pagan LM test	681.20 (0.000) ***			
F-test (fixed effects)	396.25 (0.000) ***			
Hausman test	39.64 (0.000) ***			
R-squared	0.622	0.665	0.667	0.667
Observations	201	201	201	201
Multicollinearity (Mean VIF)	1.96			
Heteroscedasticity (χ^2 - stat)			230.80 (0.000) ***	
Serial Correlation (F-stat)			111.461 (0.000) ***	
Ramsey RESET test (Omitted variables)				0.21 (0.889)
Durbin				0.108 (0.742)
Wu-Hausman (Tests of endogeneity)				0.103 (0.749)

Notes: Figures in the parentheses are t-statistics, except for Breusch-Pagan LM test, F-test, Hausman test, Heteroskedasticity, Serial Correlation, Ramsey RESET, and Durbin-Wu-Hausman which are p-values. *, ** and *** denote 10%, 5%, and 1% level of significance, respectively.

The results of the robust fixed effects model in Table 6.5 display that female primary education has no effect on economic growth. Female secondary and tertiary education affects economic growth positively and significantly. This means that an increase in female secondary and tertiary education promotes economic growth. The results suggest that an increase of 1% in female secondary education and female tertiary education, GDP

per capita is expected to increase by 0.9% and 1%, respectively. The results are similar to previous studies showed that a positive relationship between female education and economic growth (Alaoui, 2016; Kaur & Letic, 2012; Oztunc et al., 2015). Alaoui (2016) found that female education has positive effect on economic growth of countries such as Morocco, Algeria, Tunisia, and Egypt.

The results show the negative effect of government education expenditure on economic growth. This might be due to the allocated funds for education sector development not being properly utilized (Nurudeen & Usman, 2010). In the study by Heyneman (1997), it was shown that the main reason behind the low-quality education in the Middle East and North Africa is not a scarcity of monetary resources but the inefficiency of managing the resources already allocated. Another probability is that increase in education expenditure reduces the government's ability to spend on other economic activities. The coefficient of labour force growth is negative and significant, whereas the coefficient of population growth is positive and significant. Growth rate of capital stock and trade openness have no effect on economic growth.

6.4.5 Discussion of Findings

Generally, there is a theoretical consensus among scholars about education as an enabler in boosting economic growth. Ever since the second half of the 20th century, several studies have concentrated on how human capital accrual might be advantageous to individuals, businesses, and community. The advantages of education are numerous: education raises an individual's earnings, increases productivity, and boosts economic growth. In a related study by Mankiw et al. (1992), human capital was revealed to be one of the causalities for the differences in income among countries. They discovered a positive and significant correlation between human capital and the per capita income growth. In addition to this, Barro (1991) who conducted a study on 98 countries equally

attained similar outcome. The study analysis took the enrolment rates of the primary and secondary schools as a proxy of the human capital. Thus, it can be surmised from the outcomes and the explanation given in this section that the education of males and females account directly towards the economic growth in the Middle Eastern countries. Previous researchers such as Lucas (1988), Mankiw et al. (1992), and Nelson and Phelps (1966) discovered that the capita GDP growth has positively and substantially affected the human capital. Based on a study by Lucas (1988), the human capital is deemed as the driver of economic growth, with the understanding that individuals make educational investments to accrue new skills and knowledge.

In the Middle East, over the course of the past several decades, there have been significant shifts in the level of educational achievement. The secondary and tertiary education sectors have seen the most significant growth in recent years. In all Middle Eastern nations, the secondary enrolment rates are higher than 82 percent when compared to the relevant age groups of the students. In some parts of the world, such as Turkey, the United Arab Emirates, and Saudi Arabia, the percentage surpasses 100 percent. At the tertiary level, graduates from universities in Middle Eastern nations account for a large proportion of the total. Bahrain, Iran, Kuwait, Saudi Arabia, and Turkey are among the countries in the Middle East with the highest enrolment rates for tertiary education in the developing world. These countries include Bahrain, Iran, Kuwait, Saudi Arabia, and Turkey, all of which have tertiary enrolment ratios that exceed 50%. It may be claimed that universities get an excessive share of the education expenditure in nations across the Middle East and North Africa.

Government spending on education has risen substantially as a percentage of GDP in all nations, reflecting the expansion of secondary education and the expansion of university enrolments in the Middle East. Despite this, there are significant differences

across the nations mentioned. According to the International Monetary Fund, Saudi Arabia spends a greater percentage of its GDP on education than any other country in the area; in fact, the proportion is higher than that of the vast majority of developing nations worldwide. Bahrain, Jordan, and Egypt, on the other hand, maintain a low percentage of the population. Recently, efforts have been undertaken to educate both girls and boys, since universal female literacy was seen to be a highly desired social and development goal in both the short and long term. In every country, significant strides have been made in the education of girls and women. In most countries, female schoolchildren and students are taught separately from male schoolchildren and students, which some educationalists believe is a benefit since the females are not crowded out by more aggressive male pupils.

In this section, the findings of the effects of education by levels and gender on economic growth are discussed under four main points. The first discussion point relates to the results indicating that the secondary and tertiary education are significant and contribute positively to economic growth. The results suggest that an increase of 1% in secondary education and tertiary education, GDP per capita is expected to increase by 0.5% and 1.1%, respectively. This confirms that the people who have completed secondary and tertiary education can contribute to the economy, where secondary and tertiary education provides the labour market with people who have medium and higher skills to enhance their productivity and enable them to contribute to achieving a high-income economy. The results are similar to that obtained by Awad et al. (2013) who showed that both secondary and tertiary education significantly affected economic growth in Arab countries from 1990 to 2010. Based on the research done by Lutz et al. (2008), together with Lee and Kim (2009), secondary and tertiary education are the main determinants of economic growth. Further, Tsai et al. (2010) reported that the most

important contributors to economic growth were secondary and tertiary education in 60 developed and developing countries between 1996 and 2006.

The second discussion point relates to the results indicating that the primary education has no effect on economic growth in the three specifications (both sexes, male and female). The most important reason might be that the skills of primary educated people are not enough to obtain high productive jobs. Production of primary educated workers tends to be concentrated in low value-added sectors that do not require high skills or education levels. In the meantime, the employments offered to the labour force might not be suitable for people with less than secondary education as the qualification does not match the requirements. This result is similar with Sieng and Yussof (2014) and many studies that found primary education has insignificant impact on economic growth where the lower education will not lead to an effect on economic growth. This may be due to the fact that currently enrolled primary students are still at school and not working yet. Another probability is that primary school education is compulsory in Middle East countries, so it does not directly affect the economic growth as compared to secondary and tertiary education.

The third discussion point relates to the results indicating that the tertiary education contributed more to the economic growth compared to primary and secondary and education in the three specifications (both sexes, male and female). According to Masri and Wilkens (2011), tertiary education has an invaluable part in the community as it develops further prospects for progress and offers knowledge transfer for students and other interested parties, and encourages transformation, creativeness, innovativeness, and advancement.

There are two proposed explanations for how tertiary education promotes economic growth. First, in the past two decades there has been a proliferation of tertiary education

institutions in the Middle East that has led to many of the level's graduates. While in 1996, the enrolment ratio for tertiary education was 18% in the Middle East, by 2018, there was 50%. This proliferation of tertiary education institutions reflects the strong demand for knowledge and training. The graduates of universities find jobs in the fields in which they were trained due to market-oriented and cutting-edge programs. It is clear that higher education graduates possess the requisite knowledge and skills that are a good match for the needs of the labour market and the employers seem to find so valuable to employ them. According to Blinova et al. (2015) and Snieška et al. (2015), tertiary education is consistently the determinant that leads to the decline in unemployment levels, and to the intensification in the formation of employment to sustain the growth of the economy. This indicates that tertiary education is extremely crucial for the growth of the economy via the employment rate as an indicator.

The second explanation is that tertiary education promotes economic growth through technology innovation. From the study of Kruss et al. (2015), the researchers emphasized the significance of the connection between tertiary education and technological innovation in relation to production and progress at the global level. Findings from the study compellingly recommended for the intensive investment in the tertiary education to sustain the favourable correlation between this education level and economic growth through technological innovation.

Moreover, tertiary education persists to be a crucial determinant of economic growth. Although the advantages of educational investment consume a lengthier duration of time to exhibit results, investments in education are crucial to assist children to be workers with greater knowledge and advanced skills in the forthcoming times. Hence, educational investment is among the finest investment choices which countries can choose for a greater prospect. In other words, it is necessary for countries to access the anticipated

advantages of human capital accrue towards economic growth, and apportion sufficient development budgets, in addition to formulating policies which assist in growth.

The fourth discussion point relates to the results indicating that the female education levels are highly positively related to the economic growth compared to the male education levels. This result is consistent with the findings of Self and Grabowski (2008), Khan (2016), Sehrawat and Giri (2017), and Singh et al. (2018) who indicated that female education accounted more to the economic growth in comparison to males. The findings can be explained by the fact that females have multidimensional part to play in the community in comparison to their male counterparts. Thus, whatever policies that enhance and empower females, the outcomes are disseminated to the entire community, inclusive of the economic sector. The outcome is in tandem with the policies by the government towards the enhancement of the involvement of women in the economy by the intensification of their workforce participation.

In general, the Middle East has seen an increase in the number of female secondary school students during the past several decades. Socioeconomic variables may result in varying societal and private advantages and costs for female education depending on the circumstances. As a result, different private and societal rates of return on female education may be achieved in various parts of the globe, resulting in differing motivations to invest in female education. According to the findings of this research, women's secondary and tertiary education are positively associated with economic development, indicating that increasing access to education for women should be the primary goal for nations. It is possible that this approach will have intergenerational advantages since educated women are more likely to educate their children and to improve their chances of participating in the labour market, both of which may have a beneficial effect on

economic growth. Increasing a woman's income may benefit her family's well-being since she is able to devote more resources to her spouse, her children, her parents, and her parents' husband.

Educating women is a crucial factor in intensifying their participation in the labour force and intensifying female schooling will result in enhancing the skills and knowledge of educated women, enabling them to participate in the workforce, obtain professional occupations and secure higher incomes. Furthermore, enhanced female education can alter outdated conventional mindsets toward the part played by women in the workforce.

Consequently, it is crucial for the Middle Eastern countries to concentrate on the capacity building of their male and female citizens via the offering of quality education. It is imperative for intensified focus to be given towards educating female citizens, who are generally left behind in comparison to their male counterparts. It is of the utmost importance that the availability of education must not only be according to theoretical learning, but it must also include hands-on experiential learning that would ensure the establishment of relevant skills pertinent to fulfilling and matching the needs of all sectors of the economy after they finish their schooling. A holistic education approach should be provided to enhance their capacity building, knowledge, and skills development, in addition to nurturing a regional long-term economic growth.

6.5 Chapter Summary

The main purpose of this chapter is to examine the impact of three main education levels – primary, secondary, and tertiary – on economic growth in the Middle East countries. For this purpose, an economic growth model is used for the education levels disaggregated by gender to investigate their effects on economic growth. The study employed static panel data models for annual panel data for ten Middle East countries covering the period, 1996 to 2018. Based on the findings, there is no significant influence

of primary education on the economic growth, while secondary and tertiary education levels have significant and positive influence on the economic growth. Analysis by gender reveals that the female education levels are highly positively related to the economic growth compared to the male education levels.

Hence, the human capital accumulation may offer contributions towards the furtherance of economic growth enhancement. Educational investments are essential in supporting young people to develop as workers with enhanced knowledge and value-added skills in the forthcoming times. In other words, educational investment is considered as one of the optimal investment choices which countries can adopt for a better future. There is a need for countries to assess the expected benefits of human capital accumulation towards the economic growth, and to assign sufficient development budgets, in addition to formulating policies that sustain growth.

These findings confirm that governments need to encourage education enrolment rates for both males and females to achieve economic growth. Besides, governments should provide tertiary education facilities and encourage students to pursue their tertiary education. This is particularly significant as the importance of tertiary education is obviously undeniable in terms of generating highly skilled workers who drive toward growth and ultimately achieve a high-income economy. Briefly, the most important policy recommendation to the government is to position human capital development at the centre of its development strategy.

CHAPTER 7: FEMALE LABOUR FORCE PARTICIPATION

7.1 Introduction

The topic concerning the factors that affect the participation of women in labour force has recently attracted renewed attention. Several factors have been evidenced to affect female labour force participation, including economic, social, and demographic factors, with some of the earlier studies indicating that both economic development and growth are top antecedents of female labour force. Increasing female labour force participation leads to increased labour supply, which in turn, leads to fast economic growth (Özsoy & Atlama, 2009; Taşseven et al., 2016). Indubitably, women's participation in the labour market is associated with fertility rates, educational attainment, and life expectancy. Moreover, women's inclination towards participating in the labour market may also be determined by availability of jobs and unemployment rate, as well as population of female and urbanization rate (Kumari, 2018; Mishra & Smyth, 2010; Tasseven, 2017; Tsani et al., 2013).

This chapter is motivated by the low rate of female labour force participation in the Middle East, in comparison to all world regions - even to developing countries that historically had low female participation rates. In fact, even though women constitute 48% of the Middle Eastern working-age population, they only make up 20% of the labour force, making the gender gap in labour force participation high in the Middle East region. To compound the matter further, although the participation of women in the labour force plays a significant role in growth and development, only a few studies have been dedicated to examining the factors that affect female labour force participation, particularly in the Middle East countries. Therefore, the objective of this chapter is to analyse the possible determinants of female labour force participation in the Middle East countries, and these include female education and fertility rate, among others. This chapter provides a significant contribution to the existing literature that may be helpful

for the policymakers in the Middle East countries to formulate policies that will encourage women to engage actively in the labour market to enhance their productivity and enable them to contribute to achieving a high-income economy. The model is estimated using the static panel data models –pooled OLS, random effects, and fixed effects– for ten Middle East countries during the period from 1996 to 2018.

7.2 Overview of Labour Force Participation

This section presents an analysis of the labour force participation rate in the Middle East countries for the period from 1996 to 2018. Figure 7.1 presents the labour force participation rate in the Middle East countries from 1996 to 2018. Overall, the labour force participation rate increased consistently from 59.8% in 1996 to 61% in 2005, and further increased to 65% in 2018, with an average labour force participation rate of 61% over the period.

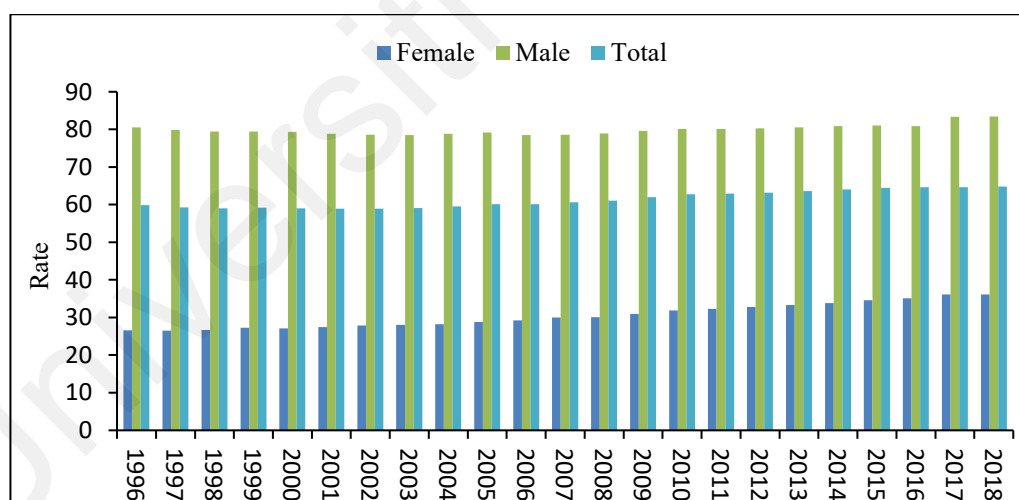


Figure 7.1: Labour force participation rate, 1996-2018

Source: World Bank (2020).

In terms of gender, the male labour force participation rate increased marginally to 83.4% in 2018, compared to 80% in 1996. Nevertheless, male labour force participation rates remain higher than that of female labour force. The female labour force participation rate has increased consistently since 1996. The period from 1996 to 2005 witnessed an

increase of female labour force participation rate from 26.6% to 28.8% and further to 36% in 2018. This figure clearly shows that there is a wide gap between male and female labour force participation rate in the Middle East region between 1996 and 2018. These discrepancies between female and male participation in the labour force points to a considerable potential of increased female labour participation in the region.

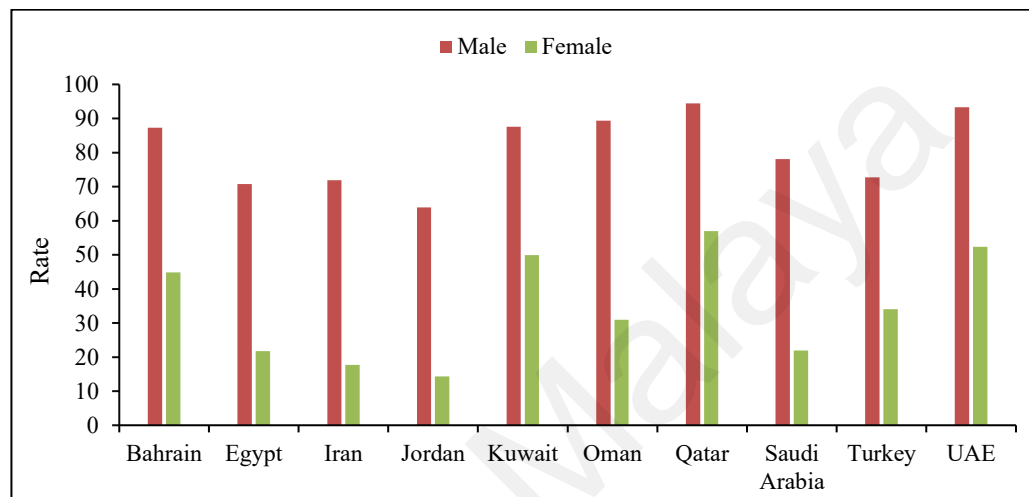


Figure 7.2: Labour force participation rate by country, 2018

Source: World Bank (2020).

Figure 7.2 presents a summarized comparison of the rate of labour force participation in the Middle East countries. It comprises the labour force participation rate in gender-wise for all the countries in this study, which are included for comparison. Based on the figure, Qatar has the largest female labour force participation rate in 2018 at 57%, compared to the rest of the countries, followed by UAE at 52.4%. On the other hand, from the examined countries, the country with the lowest female labour force participation rate is Jordan at 14.36%. Although, in general, female labour force participation has increased in the Middle East countries, there are large gaps between male and female labour force participation in all countries. Still, female labour force participation remains lower than male labour force participation in all countries.

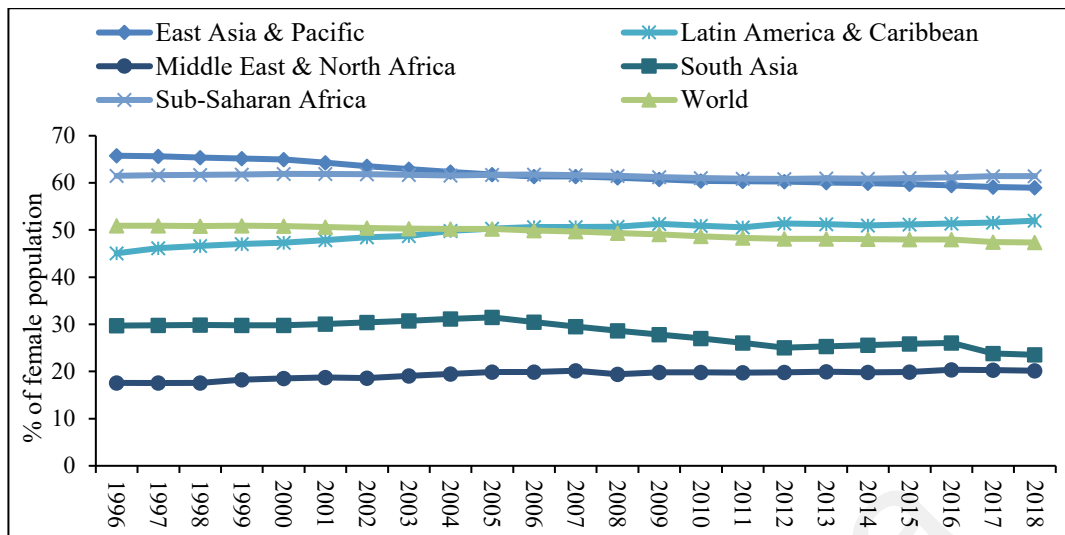


Figure 7.3: Female labour force participation by regions

Source: World Bank (2020).

In respect of international comparison, Figure 7.3 compares female labour force participation rate in Middle East region and different regions of the world. It depicts the trend of change in female labour force participation rate. Overall, the female labour force participation rates have remained nearly unchanged in most world regions since 2010. The female labour force participation rates have been declining in East Asia & Pacific and South Asia during the period from 1996 to 2018. While it started to constantly increase in Latin America & the Caribbean and Middle East & North Africa at the same time. However, as shown in Figure 7.3, the female labour force participation rate in Middle East and North Africa is lagging those in different developing regions and shows the lowest rate at 20.2% in 2018, which equates to under half of the global rate.

Figure 7.4 presents total labour force and unemployment rate by country in 2018. As shown in the Figure, Turkey has the highest total labour force with 32.83 million, followed by Egypt with 30.18 and Iran with 27.77. In contrast, Bahrain has the lowest total labour force with 0.93 million, followed by Qatar with 2.09 and Kuwait with 2.38. In terms of unemployment rates, the highest rate of total unemployment across Middle East countries was in Jordan at 14.96 as percentage of total labour force and the lowest

rate was in Qatar at 0.11%. In terms of gender, female unemployment rates remain higher than that of male unemployment in all Middle East countries. This trend is expected to continue increasing in the coming decades if the governments of these countries do not formulate economic policies that promote a lower unemployment rate and a higher labour force participation rate.

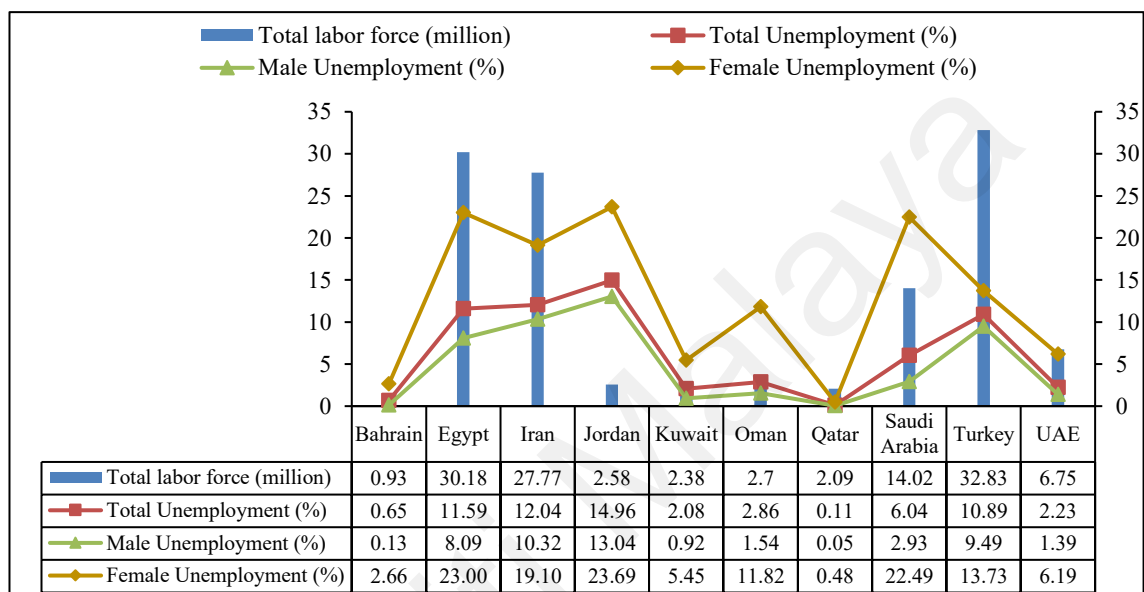


Figure 7.4: Total labour force and unemployment rate by country, 2018

Source: World Bank (2020).

7.3 Descriptive Statistics

Table 7.1 tabulates the descriptive statistics of the variables used in the regression analysis. The female labour force participation rate indicates a minimum rate of 10.66% and the maximum rate of 58.93%, with an average rate of 30.41%. The fertility rate, which measures the average number of children per woman has the minimum rate of 1.61 and the maximum rate of 4.98. Female primary education indicates a minimum of 66% and the maximum being 121.48%. Female secondary education shows a minimum of 48.68% and the maximum of 118.28%. Female tertiary education indicates the presence of gaps between the minimum and maximum ratios in countries, with a minimum of 6.15% and the maximum of 88.89%.

Table 7.1: Descriptive statistics for female labour force participation model

Variables	Observations	Mean	St. Dev.	Min.	Max.
Female labour participation	230	30.41	13.89	10.66	58.93
Fertility rate	230	2.73	0.72	1.61	4.98
Female primary education	230	99.89	9.35	66	121.48
Female secondary education	230	87.89	12.81	48.68	118.28
Female tertiary education	230	36.18	16.20	6.15	88.89
Urbanization rate	230	78.93	15.92	42.66	100
Female unemployment	230	11.31	7.87	0.62	26.10
GDP per capita growth rate	225	0.68	4.10	-15.15	15.98

Source: Authors' computation from STATA 15.

Urbanization rate, which refers to people living in urban areas has the minimum rate of 42.66 and the maximum rate of 100. The countries' female unemployment average is at 11.31, with the minimum country female unemployment being 0.62 and the maximum country female unemployment of 26.10. GDP per capita growth rate indicates a minimum negative growth of -15.15% and the maximum growth being 15.98%.

7.4 Empirical Results

7.4.1 Unit Root Test

Table 7.2 shows the results based on the panel unit-root tests – Levin Lin Chu test and ADF-Fisher Chi-square. The results revealed that the tests are statistically significant at 5 significance level. This means that there is no unit root, and that the data are stationary at level. This allows the researcher to run the regressions for analysing the empirical results of this study using static panel data models.

Table 7.2: Panel unit root tests for variables for female participation model

Variables	Levin, Lin & Chu	ADF - Fisher Chi-square	Final result
Female labour force participation rate	-1.652 (0.049)	32.334 (0.040)	I (0)
Fertility rate	-7.656 (0.000)	71.024 (0.000)	I (0)
Female primary education	-3.413 (0.000)	50.318 (0.000)	I (0)
Female secondary education	-4.414 (0.000)	48.918 (0.000)	I (0)
Female tertiary education	-1.750 (0.040)	37.796 (0.009)	I (0)
Urbanization rate	-9.685 (0.000)	78.673 (0.000)	I (0)
Female unemployment	-1.947 (0.026)	44.405 (0.001)	I (0)
GDP per capita growth rate	-5.140 (0.000)	74.050 (0.000)	I (0)

Notes: Values in parentheses refer to the probability of the test statistics. The null hypothesis of Levin, Lin & Chu t-test assumes common unit root process, while the ADF - Fisher Chi-square assumes individual unit root process.

7.4.2 Static Panel Data Models

This study employed static panel data models. The three alternative models of panel data are pooled Ordinary Least Squares (OLS), random effects, and fixed effects, which will be employed to analyse the determinants of female labour force participation.

The empirical estimates are reported in Table 7.3, which displays the factors that affect the female labour force participation. Based on the results in the table, the Breusch-pagan LM test favours the random effects model to the pooled OLS technique in that the model is more appropriate since the p-value for the estimated test statistic is less than 0.01. The F-test favours the fixed effects model since the p-value is less than 0.01. In addition, the Hausman test reveals that the fixed effects model was better than the random effects because the p-value was less than 0.01 (see Appendix K). The next step involved the running of diagnostic tests. The result of the variance inflation factor (VIF) showed that the mean VIF was less than 10 (see Appendix T), denoting no serious problem of multicollinearity. Besides, the results displayed that the null hypotheses were rejected (p-value less than 0.01) for both the heteroscedasticity test and autocorrelation test. This

indicates that there were heteroskedasticity and autocorrelation problems. Therefore, the fixed effects model with robust standard errors was used to rectify the heteroskedasticity and autocorrelation problems.

Furthermore, the analysis proceeds with the Ramsey RESET test (test of omitted variables) and Durbin Wu–Hausman (tests of endogeneity). The results reveal that the p-value of the tests are more than 0.05, then there is no evidence of functional form misspecification and the variables are exogenous (see Appendix CC and Appendix LL).

The results of the robust fixed effects model in Table 7.3 reveal significant negative impact of fertility rate on female labour force participation rate, which means women who have children to raise tend not to participate in the labour force. In terms of female education, the results show that primary education has no effect on female labour force participation. For secondary and tertiary education, the findings indicate that female tertiary education positively affects female labour force participation, while the female secondary education negatively affects female labour force participation. These results confirm the conclusions of Chamlou et al. (2011), Chapman (2015), and Verme et al. (2016), who revealed that tertiary education has a positive impact on female labour force participation, whereas secondary education has a negative impact on the same in the Middle East and North Africa region.

Table 7.3: Factors affect female labour force participation rate

Variables	Pooled OLS	Random Effects	Fixed Effects	Robust Fixed Effects Model
Fertility rate	-2.868 (-3.25) ***	-5.655 (-10.10) ***	-5.678 (-10.44) ***	-5.678 (-2.76) **
Female primary education	0.117 (1.59)	0.054 (1.81) *	0.046 (1.62) *	0.046 (0.76)
Female secondary education	0.255 (4.05) ***	-0.123 (-4.08) ***	-0.149 (-5.06) ***	-0.149 (-2.10) *
Female tertiary education	0.019 (0.49)	0.154 (7.84) ***	0.175 (8.97) ***	0.175 (4.18) ***
Urbanization rate	0.003 (0.06)	-0.185 (-2.43) **	-0.324 (-4.03) ***	-0.324 (-2.63) **
Female unemployment	-1.166 (-12.59) ***	-0.372 (-3.63) ***	-0.232 (-2.23) **	-0.232 (-0.89)
GDP per capita	-0.144 (-1.34)	0.020 (0.48)	0.022 (0.54)	0.022 (0.37)
Constant	16.486 (2.48) **	64.599 (8.61) ***	75.904 (10.47) ***	75.904 (4.97) ***
Breusch-Pagan LM test	1058.02 (0.000) ***			
F-test (fixed effects)	168.81 (0.000) ***			
Hausman test	22.90 (0.000) ***			
R-squared	0.798	0.654	0.661	0.661
Observations	225	225	225	225
Multicollinearity (Mean VIF)	2.48			
Heteroskedasticity (χ^2 - stat)			1521.80 (0.000) ***	
Serial Correlation (F-stat)			68.710 (0.000) ***	
Ramsey RESET test (Omitted variables)				2.85 (0.097)
Durbin Wu-Hausman (Tests of endogeneity)				0.189 (0.664) 0.181 (0.671)

Notes: Figures in the parentheses are t-statistics, except for Breusch-Pagan LM test, F-test, Hausman test, Heteroskedasticity, Serial Correlation, Ramsey RESET, and Durbin-Wu-Hausman which are p-values. *, ** and *** denote 10%, 5%, and 1% level of significance, respectively.

Regarding urbanization, the results indicate that urbanization rate negatively influences female labour force participation. The negative coefficient is similar to that obtained by Uraz et al. (2010) who explained that low-skilled female individuals that migrated from rural to urban areas found it difficult to find jobs - thus leading to a decrease in the female labour force participation in Turkey. In the research done by Tsani

et al. (2013), the findings showed that urbanization had a negative impact on female labour force participation. In a recent study by Riaz and Nadeem (2019) found that married women and those who are living in urban areas are less active in labour market in Punjab, Pakistan. These results may be due to cultural values working against their participation in market work, their lack of education and marketable skills as well as due to the unfavourable labour market conditions. Female unemployment and GDP per capita have no effect on female labour force participation since the coefficients are insignificant.

7.4.3 Discussion of Findings

Half of Middle Eastern working-age population are women, but they constitute only 20% of the labour force. In 2018, the ratio of female to male labour force participation rates in the Middle East are lagging those in different developing regions and shows the lowest ratio at 30%, which equates to under half of the global ratio. This ratio reflects a gap of 70% between the female and male activity rates. It assures the existence of the problem of the gender gap in economic activity in the region.

Gender gap in the labour force begins with women's higher barrier to entry relative to men. Working-age women in the Middle East are less likely than males to be in the labour force, with various groups of women having varying degrees of involvement in the labour market. Even though men and women have approximately similar proportions of the working-age population throughout time, men and women's rates of labour force participation have diverged considerably in recent years. Because female labour force involvement has traditionally been lower than male labour force participation rates, a gender gap in labour force participation rates has been a persistent problem in the Middle East for many years.

Women with varying degrees of education also have varying levels of involvement. The higher the degree of education, the greater the proportion of women who participate

in the labour force. Another essential factor to consider is the individual's age. The number of women from the younger generations participating is rising in comparison to women from the older generations. The improvement in labour force participation rates that has occurred during the early 2000s is evidence of this.

Female unemployment is high in general, with a significant percentage of women out of the labour force. Most of the blame may be attributed to the caregiving duties assumed by women in the home. Even if they have completed their education, many women are prevented from joining in the labour field because of their home obligations. Increases in the rates of birth would also result in a decrease in the involvement of women in the labour force, as previously stated.

Regarding policy implications, since the early 1980s, numerous initiatives have been implemented by the Middle Eastern governments to improve the working circumstances of women and increase their participation in the labour force. Furthermore, flexible working-time arrangements should be made available, which implies that laws that eliminate discrimination against part-time employment will increase female involvement in the workforce. To encourage women to engage in the labour market, special attention should be paid to supporting their families with children, for example, via parental leave and day care subsidies. Female involvement may be increased by avoiding restrictions that hinder the development of service industries, immigration policies that have an effect on the relative cost of childcare, and assistance programmes provided via "make work pay" schemes.

This section contains the explication on the impact of the rate of fertility and the education levels of females on their participation rate in the labour force and are discussed under three key points. The first point of discussion is pertaining to the results signifying the significant negative effect of the rate of fertility on the participation rate of females in

the labour force, that implies women with children are required to be with their children, and are obligated to give childcare, in addition to family matters, discouraging their decision to be engaged in the labour market. The result suggests that an increase of 1 in fertility rate, female labour force participation is expected to decrease by 5. This result is in line with the findings of the study conducted by Mishra and Smyth (2010) and Tsani et al. (2013), who discovered that fertility possesses a negative correlation with the participation of females in the labour force.

The negative correlation is because women with more children need to give them extra intensive care, compelling them to make a compromise between being involved in the labour force and giving care to their children and family - the final choice is usually in favour of family matters. From the human capital theory, in addition to other empirical proof, there are implications that the high rates of fertility would necessitate the women to pull out of the labour market to be a caregiver for their children. Consequently, rise in the rates of birth would lead to lower supply of females in the labour market.

The second point of discussion is pertaining to the findings which show that participation of females in the labour force was not impacted by primary education. This finding is in line with the study findings of Cameron et al. (2001) which showed that primary schooling has two effects, either a negative effect or no effect on the participation of females in the labour force in the Asian countries. This may be because the increase in female primary enrolment ratio doesn't mean that there will be an increase in the ratio of female labour force participation with primary education as the highest education level. Another probability is that women possessing low levels of education may choose to be at home and be caregivers to the young or elderly members of the family. Based on research conducted by Klasen et al. (2019), impacts of education possessed by women

varies significantly among countries, which explicates the huge portion of disparities between countries in terms of participation rates of females.

The third point of discussion is pertaining to the findings demonstrating that the possession of female tertiary education has positive impacts on their participation in the labour force, but that of secondary education negatively impacts their participation in the labour force. The actual reason is, if they choose to enrol in secondary school, they cannot participate in the labour force. Thus, increase in secondary education means reduction in labour force participation. The result suggests that an increase of 1 in female tertiary education, female labour force participation is expected to increase by 0.18. In addition, this may be due to the relationship between the women's education and income. The increase of education of women could result to a rise in their salary. Women who possess secondary education would reject work and choose to engage in pursuing their tertiary education to secure a decent job that fits their desires, which subsequently results in a decline in the participation of females in the labour force. According to Lassassi and Tansel (2020), female involvement rates rise significantly as a result of educational attainment. They discovered that participation rates for females at the lowest levels of education are very low in all nations, particularly at the lowest levels of education. Female involvement rates were found to be quite high at the tertiary level, on the other hand. Furthermore, when comparing younger and older females, the involvement rate is greater for the younger ones. MENA nations have seen an increase in female educational attainment, which has contributed to this outcome.

An alternative reason is that the employments offered to women in the labour market for women who have higher-level skills might not be suitable for women with secondary education as the qualification does not match the requirements. In the meantime, the skills offered by tertiary education holders are adequate to secure highly skilled jobs. According

to Assi and Marcati (2020), as workplaces undergo a major transformation in the Middle East, upskilling the workforce is a priority in both the public and private sectors. For example, digitization will almost certainly have a significant effect across all industries and professions, resulting in exponential rise in the demand for technological skills and the creation of new employment possibilities for women with technical backgrounds. Women in the workforce will need to learn digital skills in order to compete for these positions, and all high- and medium-skilled workers (including 98 percent of working women) will need to get more used to using digital tools and sophisticated analytics in their present employment as a result.

This implicates that in instances of a higher level of education possessed by females, they begin to secure a larger portion of jobs in the labour force, showing that a higher level of education could result in an increased participation of women in the labour force (Ince, 2010). The findings verify the inferences made by Chamlou et al. (2011), Chapman (2015), and Verme et al. (2016), who disclosed that the participation of females in the labour force was positively affected by their tertiary education. However, the participation of females in the labour force was negatively affected by their secondary education in the Middle East and North Africa region. The explication of the studies indicated that even though the rates for secondary education adhered to an escalating trend over the past thirty years, it did not result in the intensification of the regional participation of females in workforce. This was partly ascribed to the outlooks of conservative society towards working women in the region (Klasen & Pieters, 2015).

Overall, from the analysis, it can be generally stated that tertiary education and fertility are important determinants of the female labour force participation rate. The education variable implied that women possessing tertiary education are involved more compared to those with primary and secondary education. The results from this study suggest that

women possessing higher educational achievements have better prospects in work. The possession of higher education qualifications enhances the labour market prospects for women when it comes to job selections. A higher and enhanced educational accomplishment enhances labour productivity through the accrual of skills and knowledge, hence enabling females to attain higher salaries, in addition to greater perks and rewards.

The estimates showed the existence of a positive impact of possessing tertiary education on the female labour force participation rate, as substantiated in the literature (Contreras et al., 2005; Evans & Kelley, 2008; Ntuli & Wittenberg, 2013; Olowa & Adeoti, 2014; Vlasblom & Schippers, 2004). The findings endorse the human capital theory, where there is a high correlation between education and the decisions to be involved in the workforce. As an exemplar, although a woman who is highly educated is often more career-minded, and hence more probable to work, it is equally probable that compelling partialities for work in the labour market might encourage women to indulge more in education investment. Hence, it is advocated strongly that policies be established and aimed at advancing education as a tool to boost the participation of females in the labour force, and their earnings towards the enhancement of standard of living of households.

This study also verified the negative impact of fertility on the participation of females in the labour force. Congruent with past empirical outcomes of Mishra and Smyth (2010), Moschion (2013), Tsani et al. (2013), and Karbownik and Myck (2016), fertility has a negative causal impact on the participation of females in the labour force. This signifies that woman with children have little to no inclination to participating in the labour force. Consequently, additional endeavours and initiatives should be mobilized to formulate family-oriented policies that hold provisions for childcare, dependent care and paid leave

for women and men within organized and unorganized sectors to assist employees to have a work-life balance and consideration for family roles.

7.5 Chapter Summary

The main purpose of this chapter is to investigate the possible determinants of female labour force participation in the Middle East countries and the examined determinants are fertility rate, female primary education, female secondary education, female tertiary education, urbanization rate, female unemployment, and GDP per capita. For this purpose, the study employed the static linear panel data models for ten Middle East countries covering the period from 1996 to 2018. The empirical results of this study indicate that female tertiary education has a positive and significant impact on female labour force participation rate, while fertility rate, female secondary education, and urbanization rate have negative and significant impact on female labour force participation rate.

The study findings suggest the importance of the government's provision of tertiary education facilities to female students and their encouragement for women to pursue tertiary education to increase participation in labour force. This argument may be related to the fact that the importance of tertiary education is obviously undeniable in terms of generating highly skilled workers. Moreover, policies in the Middle East should remove barriers to women's labour force participation and encourage them to engage actively in the labour market as this can achieve significant economic benefits.

CHAPTER 8: CONCLUSIONS AND IMPLICATIONS

8.1 Introduction

This study empirically examined the implications of demographic change and education on the economic growth in the Middle East, with the human capital-augmented neoclassical growth model used, considering age structure as a component of available human capital as inspired by Mankiw et al. (1992). This study was based on three main econometric models that comprise its core topics: demographic change, education levels, and labour force participation. The study was divided into three main topics. The first topic defined demographic change more broadly than most of the literature, using internal demographic composition of the working age population by age (young workers, middle-aged workers, and senior workers) and by gender (male and female). Besides that, two proxies for population ageing were used, namely population aged 65 and over and old dependency ratio, to investigate their impacts on economic growth. The second topic examined the effect of different levels of education namely primary, secondary, and tertiary on economic growth, and examined whether the effect at all levels of education differs according to gender in the Middle East countries. The third topic investigated the possible determinants of female labour force participation in the Middle East countries and the examined determinants are fertility rate, female primary education, female secondary education, female tertiary education, and others. The empirical models were tested using static panel data models. The three alternative models of panel data are pooled Ordinary Least Squares (OLS), random effects, and fixed effects - these are employed to investigate the relationship among demographic change, education and economic growth for the 10 countries in the Middle East over the period 1996 to 2018.

This chapter is divided into seven sections. Thus, the objective of this chapter is to present the summary of key findings and priority policy actions. After that, policy

recommendations, contributions of the study, limitations of the study, and suggestions for further research are enumerated.

8.2 Key Findings

The study at the onset set up five research questions and the research objectives. The five research objectives were empirically achieved. The objectives were re-stated as:

1. To examine the relationship between the composition of the working-age population (by age group and gender) and economic growth in Middle East countries.
2. To investigate the relationship between population ageing and economic growth in Middle East countries.
3. To determine the effect of primary, secondary, and tertiary educational levels on economic growth in Middle East countries.
4. To explore the gender effects of educational levels on economic growth in Middle East countries.
5. To assess the impact of female education and fertility on female labour force participation in Middle East countries.

8.2.1 Summary of Objectives 1 and 2

The empirical findings that address research objectives 1 and 2 were described in Chapter 5. It involved the analysis of the relationship between demographic change, population ageing and economic growth. In the Middle East, the ratio of working age population has shown an increasing trend, which for the workers ratio is similar to the trends in developed countries that experience an ageing population. Therefore, a huge surge in the working age population in the Middle East, as a demographic force, offers a historic opportunity that countries must seize. The opportunity to get benefits due to a

change in age structure is temporary, after which the ageing population will ultimately constrain economic growth. The chapter investigated the impact of the composition of working age population and the old-age dependency ratio on real GDP per capita in the Middle East, while considering other determining factors, including growth rate of capital stock, labour force participation ratio, education expenditures, trade openness, and regulatory quality. Here, internal demographic composition of working age population was used as measures of demographic change. In addition, two proxies for population ageing were used, namely population aged 65 and over and old-age dependency ratio.

The working age population model was extended to classify into six age groups: young male workers, young female workers, middle-aged male workers, middle-aged female workers, senior male workers, and senior female workers. The findings confirmed the hypothesis that economic growth is driven by population, which forwarded the notion that population changes in a country will encourage economic development. Empirical findings suggested that working-age population structure based on age group cohort will stimulate the intensification of the economic growth in the Middle Eastern countries. The high proportion of working age population can develop capital and boost the national per capita income. When a comparative majority of the population hits the prime age for working and for making savings, a country will undergo an economic advancement that is stimulated by the demographic factors. This is due to a higher rate of participation that boosts the vitality of the labour market, and high levels of skilled labour that enables the economy to be more flexible and more able to act on shifting economic trends. As demographic changes escalate, it can be anticipated that these shifts might have a larger effect on the economic performance of countries in the future. Moreover, analysis by gender showed that the composition of male working-age population was highly positively related to the economic growth compared to the composition of female working-age population. This may be due to the fact that women constitute a high

percentage of the population the Middle Eastern working-age population but have low percentage of the labour force participation rate. Previous studies found that the Middle East region reports the largest income loss due to gender gaps in the labour market.

In respect of the population ageing, the old-age dependency ratio has slightly increased in the Middle East and this trend is expected to continue in the coming decades. These indicators reflect the number of people of non-working age compared to the number who are of working age. Empirical results revealed that the population aged 65 and over and the old-age dependency ratio have a positive effect on economic growth.

Population aged 65 and over and old-age dependency ratio have a positive impact on the economic growth resulting from an enhanced capital formation process in the economy. According to the conclusion of numerous empirical studies, greater capital accumulation can counterbalance the negative impacts of ageing population. The positive indicator may be substantiated by the low level of ageing in the Middle East. In many Middle Eastern countries, the old-age dependency ratio is small with a value of less than 10%. The aged portion of the population will be involved in the workforce in so far as they are able, and thus, the rate of participation in the labour market is high. Through spending a longer duration of time working, the elderly can engage in more savings in comparison to the past for use in their retirement period. Also, in cases where older people have accumulated adequate savings for their old age, they will not be dependents. Therefore, the elderly population is not a matter of concern for Middle East and the mechanisms through which the effect can take place are savings behaviour and human capital accumulation of the individuals.

8.2.2 Summary of Objectives 3 and 4

The empirical findings of research objectives 3 and 4 were outlined in Chapter 6. The chapter examined the effect of education levels on economic growth. Data on the levels

of education shows that the gross enrolment ratio for all levels of education has increased over the years although there is a small disparity between the primary and secondary enrolment ratio and a significant one between the secondary and tertiary enrolment ratio. The difference has remained constant during the period. This indicates that tertiary education is substantially lagging other education levels in the Middle East countries. In terms of gender, gender gaps in school enrolment have largely closed across all regions of the world, although the Middle East region has yet to achieve parity. When the education levels were analysed according to gender, the data indicated prominent variations between the enrolment rates of the males and females in Middle Eastern countries schools. Regrettably, there existed a huge and incessant difference between the enrolment ratios for the males and females. This disparity has reduced marginally in due course but is anticipated to persist in the forthcoming years.

Three levels of education, namely primary, secondary, and tertiary were included in the education model to investigate their impact on the economic growth. This model was then extended to incorporate gender disaggregated variables. Empirical findings evidenced the null impact of primary education on the economic growth. Meanwhile, secondary, and tertiary education levels were significant and contributed in a positive manner to the economic growth. This may be because primary school education is compulsory in Middle East countries, so it does not directly affect the economic growth as compared to secondary and tertiary education. This means that currently enrolled primary students are still at school and not working yet.

The positive impacts of secondary and tertiary education on the economic growth validated those individuals who have finished their secondary and tertiary education are capable to offer their potential contribution towards the economy, and also, that secondary and tertiary education supplies the labour market with workers, who are medium-skilled

and highly skilled, to boost productivity, and enable them to contribute towards the attainment of a high-income economy.

The execution of analysis according to gender indicated that the female education levels possess a high positive association to the economic growth in comparison to the male education levels. It can be substantiated by the multidimensional part played by females in the society in comparison to their male counterparts. Thus, whatever policies that enhance and empower females, their significance permeates the entire community, inclusive of the economic sector. The outcome is in tandem with the policies of the government in enhancing the contribution of women in the economy through raising their participation in the labour force.

8.2.3 Summary of Objective 5

The empirical findings of research objective 5 were presented and discussed in Chapter 7. The chapter investigated the effect of female education and fertility rate on female labour force participation in the Middle East while considering other determining factors, such as urbanization rate, unemployment rate, and GDP per capita. Data on the rate of labour force participation presents that there is a wide gap between male and female labour force participation rate in the Middle East region, where the male labour force participation rates remain higher than that of female labour force. These discrepancies between female and male participation in the labour force points to a considerable potential of increased female labour participation in the region. In respect of international comparison, data shows the low rate of female labour force participation in the Middle East, which is currently lower in comparison to all world regions and even to developing countries that historically had low female participation rates.

The female labour force participation model followed the initial studies that analysed the determinants of female labour force participation, with the empirical model designed

with multiple independent variables: female education, fertility, urbanization rate, unemployment rate, and GDP per capita. Empirical results indicated that fertility rate has negative impact on female labour force participation rate, which means women who have children need to spend more time on household activities and childcare, deterring their participation decisions in the labour market.

In terms of female education, the results showed that primary education has no effect on female labour force participation. For secondary and tertiary education, the findings indicated that female tertiary education positively affects female labour force participation, while the female secondary education negatively affects female labour force participation. This may be attributed to the correlation between women's education and income. Increased women's education could lead to increased wages. Secondary level educated women would not want to work, preferring instead to pursue their tertiary education to get good jobs that match their aspirations. In other words, when the education levels of females increase, they start to get more share in the labour force, indicating that increased level of education could lead to increased participation of women in the labour force. In a recent study by Klasen et al. (2019), the authors found a significant relationship between a woman's education and her participation in the labour force, resembling the U-shape with negative effects of primary education and (perhaps) of secondary education, and positive effects of tertiary education.

8.3 Reaping the Dividend: Priority Policy Actions

In the Middle East region, the working-age population is a potential agent of change towards realizing a more successful future, by their role in reaping the demographic dividend. However, for this to actualize, they should be viewed as part of the probable solutions. Policy makers need to carry out critical action which is crucial if the working-

age population in the Middle East are to attain their maximum potential, offer solutions to problems, and assist the region in benefitting from the demographic dividend.

It is imperative for the Middle Eastern countries to implement the needed macro-economic strategies and changes, and the fiscal, regulatory, and labour-market policy changes, which will take full advantage of the employment prospects. Moreover, policy means targeted at boosting the demographic dividend in the countries need to concentrate chiefly on the individuals who are already in the working-age category, and to deal with the labour force participation; the creation of employment; to consider the business environment; and attend to productivity returns through enriching the human capital in the existing labour force.

8.3.1 Demographic Dividend by Investing in Education

It is a definite necessity for any country with the objective of actualizing a demographic dividend to have a well-educated workforce, with the apt combination of technical and skills needed by the labour market. Investing in education is critical. However, in the face of concerns pertaining to the educational systems quality in the region, the essential investment needed is not merely to keep abreast of the increasing numbers of school-age children, but also to facilitate accessibility to quality education for transformational investments.

There is a need to enhance quality of education throughout the primary and secondary stages to guarantee that young labour market entrants are prepared with pertinent knowledge and skills. In the face of the forecasted rise in the number of students in primary, secondary and tertiary education, this poses a substantial challenge. Resources are core essentials for the development of accessibility, as well as for the improvement in the required quality. This may stimulate a major reappraisal of the education system in

certain of the countries, that will observe the most remarkable changes in their school age population.

The achievement of success in school, work and life is dependent upon an extensive array of skills, outlooks and values that extend beyond conventional literacy, numeracy, and vocational skillsets. Owing to technological changes, the kind of work is swiftly evolving. Wider skillsets pertaining to learning, employment, personal empowerment and active citizenship are progressively significant. Learning approaches that prioritize life skills and citizenship education are crucial to guarantee that the education system generates proficient human capital workforce candidates. Hence, national systems are recommended greatly to invest extensively in a comprehensive life skillset that will form the groundwork for further learning and training, to enable the working-age population to be employable.

8.3.2 Employment and Decent Jobs

The rates of unemployment in the Middle East region are currently the highest at the global level. Thus, the mere adjustment and modification of the new labour market entrants are inadequate to maximize the economic dividend. Furthermore, half of the jobs of the future is not in existence yet, although there is a foreseeable swift technological change and its impactful effect on the economy and social lives in the future. It is essential for the working-age population to attain varying skill sets to secure jobs. Consequently, it is crucial for education systems to cultivate the required skills demanded by the changing economy towards a positive transition into the workforce. Additionally, those who are not employed presently, or are out of the workforce are needed to be incorporated into the economy. For attaining this end, a mix of policy measures is needed pertaining to labour force supply and demand.

8.3.3 Inclusive Economic Growth

A demographic dividend will not be actualized without economic growth and this economic growth needs to be inclusive. This signifies that the creation of decent quality jobs for countless of people are required. Hence, it is highly significant that policy measures which promote inclusive growth, and which lead to high quality jobs for the population at large be established and implemented. There is a need for private sector-driven job creation, as the region has been dependent on the public sector to engage new labour market entrants for an extremely long time; a scenario that has ceased to be sustainable or appropriate.

8.3.4 Unlocking the Potential of Women

This thesis noted that, the female labour force participation rate in the Middle East region is extremely low. This signifies that the region is forsaking a significant proportion of its human capital and restraining its economic growth. As indicated in the past studies, narrowing the gender disparity in the workforce engagement would multiply the labour force in the countries by more than twofold in the region. The resultant economic expansion prospects are colossal. Countries can take immense advantage from policy procedures targeted at guaranteeing the maximum involvement of girls in education, in addition to the empowerment of women economically. Accordingly, these countries will also actualize a double dividend, due to the increasing female labour force participation rate, and the decreasing female unemployment will further lessen dependency ratios. There are other means implemented to raise the female labour force participation rate, for example, the creation of active employment enterprises for women; flexible work provisions; the promotion of financial inclusion and access to finance for women; methods that advocate equal pay for men and women; initiation or expansion of parental leave provisions; and provisions of reasonable-priced childcare.

In summation, if the Middle Eastern countries in the region are unsuccessful in investing for their working-age population in preparing them for a productive life, and they do not admit the labour market entrants, the exceptional window of opportunity in capturing the demographic dividend will escape. A huge percentage of the working-age population in the region will be either out of the labour force or jobless. These people will probably be disheartened, and their state of unemployment will put a substantial dependency on public resources. It is critical to act now, in a timely manner for this depressing possibility is to be averted, and for the demographic transition to affect an invigoration of the economy for prosperity in the region.

8.4 Policy Recommendations

This current study is involved in the investigation of the effect of demographic change and education towards the economic growth of the Middle East. In this regard, numerous econometric methods and diverse models were employed, and the findings summarized in the preceding section. The ensuing specific recommendations are based on those findings:

- 1- Throughout the study period, the economic growth of the Middle Eastern countries has been impacted by the changing age composition in the population. Currently, the Middle East region is experiencing an advantageous population age composition situation by means of the total dependency ratio that has progressively declined owing to a huge working-age population. The opportunity to get benefits due to a change in age structure is not forever, and the ageing population will ultimately constrain economic growth. Therefore, a huge surge in the working-age population in the Middle East, as a demographic force, offers a historic opportunity that countries must seize. Middle East region needs demographic and economic policies that encourage population to engage actively in the labour market to enhance their productivity and

enable them to contribute to achieving a high-income economy. It is imperative for suitable policies to be in place for the purpose of developing a productive workforce through additional education and training. Henceforth, it is necessary for governments to formulate policies for improved wellbeing and education facilities to produce high economic growth, in addition to attaining an enhanced infrastructure and macroeconomic stability for the facilitation of capital accumulation in the Middle East region for economic growth prosperity.

2- In the Middle East, a significant change in the population structure has been occurring relatively rapidly which could have important economic implications on the Middle East countries in the future. Creating employment opportunities will assist to absorb those joining the labour market to make their contributions to the economy. Moreover, as youth unemployment represents one the greatest challenges faced by the Middle Eastern economies, this will lead to decreased youth unemployment rates in the region.

3- Analysis by gender shows that the male working-age population contributes more to the economic growth compared to the female working-age population. More importantly Middle East has been facing a significant shortfall of female labour force participation rate. Women constitute 48% of the Middle Eastern working-age population, but only 20% of the labour force. To overcome this situation, there is a necessity for regional policy to be formulated inclusive of various strategies that incorporate the following: eliminating obstacles to the participation of women in the labour force and concurrently, boost the active participation of women in the labour force towards the attainment of economic benefits. Furthermore, there is also the necessity to upgrade, value-add and enhance the skill levels of the female workforce through the provision of education and training.

4- One of the measures which can be taken to reap the benefits of demographic change is aged people can be considered as talented resources to work for a longer period, so if they are fit, their services should be extended. This will be an enabler for the countries to be recipients of the optimal value of older workers who have the tendency to possess extensive experience and knowledge. Nations may equally improve the stimulation impacts of ageing on the economic growth with the assistance of policy direction, in addition to coping with population ageing in the forthcoming times via reforms in the tax revenue and social security system structure, as well deriving the maximum advantage of human resources.

5- With regards to education, the findings of this study have demonstrated that education contributes positively to economic growth in the Middle East. However, the relationships vary between levels of education and economic growth. This raises arguments regarding budget allotment for different levels of education. Policies in the region should realign their budget strategy towards education levels for better educational attainment to achieve higher levels of economic growth. In addition, countries should improve not just the quantity, but also the quality of education to derive significant growth enhancing effects of education. Briefly, the most important policy recommendation to the government is to position human capital development at the centre of its development strategy.

6- When looking at levels education, the data shows that there are marked differences between primary, secondary, and tertiary enrolment rates. This indicates that tertiary education is substantially lagging other education levels in the Middle East countries. This reflects the need for the government to provide tertiary education facilities to male and female students and encourage them to pursue their tertiary education. This is particularly significant as the importance of tertiary education is undeniable in terms of

generating highly skilled workers. Furthermore, continuous assurance on the quality of higher education is necessary to ensure that students are equipped with knowledge and skills to reduce the gap between the graduate job skills and the skills needed in the workplace.

7- Concerning the female labour force participation rate, this study reveals that education and fertility are significant determinants of the decisions by females to enter and be involved in the labour force in the Middle East. Since the female labour force participation rate in the Middle Eastern countries is comparatively low in comparison to the developing countries, it is imperative for additional endeavours to be carried out to boost the participation of females in the labour force. These are inclusive of the provision of female education amenities, the promotion given for the pursuance of their education, the provision of greater flexibility in the working arrangements, part-time jobs provisions, improved child-care conveniences at the work premises, level playing field, in addition to educational assistance to improve pertinent skills.

8.5 Contributions of the Study

Demographic change and its ramifications towards the economy have been at the core of long-standing research for a considerable period. However, there is a dearth of research conducted on the Middle East which consider the age and gender composition of a population. This thesis could be deemed as a pioneer in reporting the impact of changing age composition and education on the economic growth in the Middle Eastern countries. More importantly, this study is novel and significant, unlike past studies, as it is a meticulous empirical econometric investigation employing panel data methods. This study defined working age population more broadly than most of the literature, using disaggregated age groups based on age and gender. The working-age population was classified into six age groups: young male workers, young female workers, middle-aged

male workers, middle-aged female workers, senior male workers, and senior female workers. To the best of our knowledge, this is the first known study in the Middle East using the share of working age population by age and gender as measures of demographic change. Moreover, this study used two different measures of population ageing namely population aged 65 and over and old-age dependency ratio.

In addition, most of the studies focused on the aggregate levels of education without much consideration of the relative effects of male and female education, while in this study we considered both male and female education. Accordingly, the educational levels were disaggregated according to gender (male and female) to investigate the gender impacts on education at the primary, secondary, and tertiary level on the economic growth in the Middle Eastern countries. Furthermore, dataset that is related with the Middle Eastern countries was utilized as the sample. The economic policies of these countries emphasize on devising policies that take into consideration situations in a labour market, so as to gain the advantages of demographic and educational dividends to be the essential methods for the attainment of a high level of economic growth. In this current research, the analysis of demographic change, education and economic growth was extended to the year 2018 for the entire variables.

8.6 Limitations of the Study

The unavailability of data for certain Middle Eastern countries formed one of the greatest challenges and restrictions for this current research. This is regardless of the availability of a massive data in the World Bank database for practically any type of world activity. Another limitation of the current study is the proxies selected for education. The study takes gross enrolment ratio in levels of education as the major factors affecting economic growth, ignoring other factors in other forms of non-formal education that might have contributed to the economic growth.

8.7 Suggestions for Further Research

There are numerous suggested aspects for further research examining the relationship among demographic change, education, and economic growth. Firstly, an extended study could be conducted that expand the sampling size to other Middle Eastern countries. We advocate researchers to restrict the study scope and to concentrate on Middle Eastern countries to provide illumination and clarity on the realities pertaining to the demographic and educational dividends. The findings from other research can be contrasted with this study to determine of any variances. Secondly, human capital does not solely rely on formal education, but is also dependent upon the quality of education, health, knowledge, and skills. Consequently, apart from gross enrolment ratios, researchers may incorporate other variables to be proxies of human capital to examine whether human capital maintains its impact on the economic growth, either with or without these factors. Lastly, additional research can expand this current research by categorising countries into different income group. As an exemplar, countries may be categorized into four income collectives: high-income, upper middle income, lower middle income, and low-income, to make a comparison and to ascertain the similarities or differences in the findings when countries are categorized according to their income.

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