ANALYSIS OF POVERTY AND POVERTY ALLEVIATION MEASURES AND INFORMATION TECHNOLOGY: THE CASE OF JORDAN

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ABSTRACT

This study reviews indicators of poverty and the government policies and strategies to reduce and alleviate poverty in Jordan and investigate the effects of information technologies (ITC) on the poverty in Jordan, Population growth rate, GDP at current prices, consumer price index, and human development index in addition to percentage of population use internet, percentage of export and import of ITC of the total trade are used as dependent variables. Data from different resource is collected from 1999 in which the internet started in Jordan till 2018 on the above-mentioned variables. The results show that there are negative impacts of the percentage of population using internet on the poverty rate while there are positive effects of human development index and consumer price index on poverty.

Keywords: poverty. Poverty alleviation, Jordan, information technology, internet usage, poverty in Jordan, Poverty Alleviation Strategy.

1. INTRODUCTION

Poverty is a big obsession for governments as well as development policy makers as it is one of the obstacles that face development and cause vicious circle, therefore no poverty, zero hunger and good health and well-being are on the top of the 17 sustainable development in the world which are set on 2015 to be intended to be achieved by the year 2030, however, those goals across cutting and overlapping together and with other goals.

Jordan is Middle East country bordered by the Syrian Arab republic to the north, Saudi Arabia and Aqaba gulf to the south, to the east Saudi Arabia and Iraq, and Palestine to the west. The total area of the kingdom is 89.2 thousand km2. The population of the kingdom is estimated at (10.6) million with an annual natural growth rate of 2.8% in 2018, rural population consist about (21.3 %) of the population. The population of Jordan is considered very young population; that is more than 74% and 65% of the population are under 30 and 20 years old respectively. This implies that most of the population is on the seat of education [1] (DoS. 2018).

Although the real GDP growth is about (1.9%) in 2018, the economy of Jordan still suffers internal and external regional challenges, such as the crises in neighboring Syria and Iraq causing influxes of refugees, greater health and education costs, and disruption of the trade routes. In addition to reduction of external assistance all together put the short- and medium-term pressure on the country.

There are many definitions of poverty suggested by experts and academics over time such as poverty could be the lack of command over commodities in general; alternatively, it could be the lack of command over some basic goods (e.g., food and housing). More generally, that poverty is the lack of capability to function in a given society. All these definitions point to poverty as a status in which a reasonable standard of living is not achieved. Other definition of poverty is the lack of, or the inability to achieve, a socially acceptable standard of living [2]

Most of the studies in Jordan discuss factors that affecting or causes poverty, there are none studies that linked technology and the uses of internet to poverty, therefore, this study investigate the effects of information technologies (ITC) on the poverty in Jordan, to achieve this objective the study tries to elaborate the following:

- What is the situation and main features of poverty in Jordan?
- What are the main factors that affecting the poverty in Jordan?
- What are the impacts of information technology on poverty in Jordan?

2. THEORETICAL BACKGROUND AND REVIEW OF LITERATURE

There are many studies conducted in the world and Jordan on the poverty and poverty alleviation, in this study the most important studies done in Jordan is reviewed followed by the impact of poverty on development.

Faruqi & Al-Jayyousi (2009 [4] describes a pilot project that allowed the poor woman in Tufileh governorate to reuse untreated household grey water in home gardens. A small revolving loan is created to implement simple grey water recovery systems and set-up gardens. The project allowed the community to offset food purchases and selling the surplus to generate income, so that they can save or earn about (10%) of family income. However, municipal water sources used for supplemental irrigation, on average, the household would have used (15%) or more water this increase the water bills by (27%). Furthermore, the households gain important gardening, irrigation, and food preservation skills. Women benefit from the project report feel more independent and prouder to generate income and skills to support their families. On other hand the assessments of environmental impact show that the quality of the untreated grey water was adequate, and there are negligible negative impacts on soil and crops. Thus, greater volumes of grey water can be reused in generated income to rural households.

Mohammad, Firas Alrawashdeh, and. Jaber (2014) [5] discuss some indicators of poverty in Jordan with concentration on the southern governorates to explore the affects of individual expenditures on education, individual expenditures on health, unemployment and inflation variables on poverty, the effect of poverty, and examine the relationship between poverty and unemployment. The results show that the quality of health services in the capital Amman is better than that in the southern governorate, higher the unemployment rate in the southern governorates this may due to the quality of education is lower than the one in Amman, the culture of shame and reluctance to work in entry level occupations is widespread, the failure of investments in the southern governorates which lead to less new jobs. In addition, there is

a positive relationship between poverty, individual expenditures on education, individual expenditure on health, and the inflation rate and there is a negative relationship between poverty measured by income and the unemployment rate.

2.1. Poverty and development

In development theory the poverty causes a vicious circle which should be broken in order to create the development on any country, a vicious circle has two side demand and supply side as shown in figure (1). Therefore, governments and private agencies should work in to break this a vicious circle in order to create development and achieve the Millennium goals this done by real investment on poverty alleviation policies and projects that aim to make poor productive people.
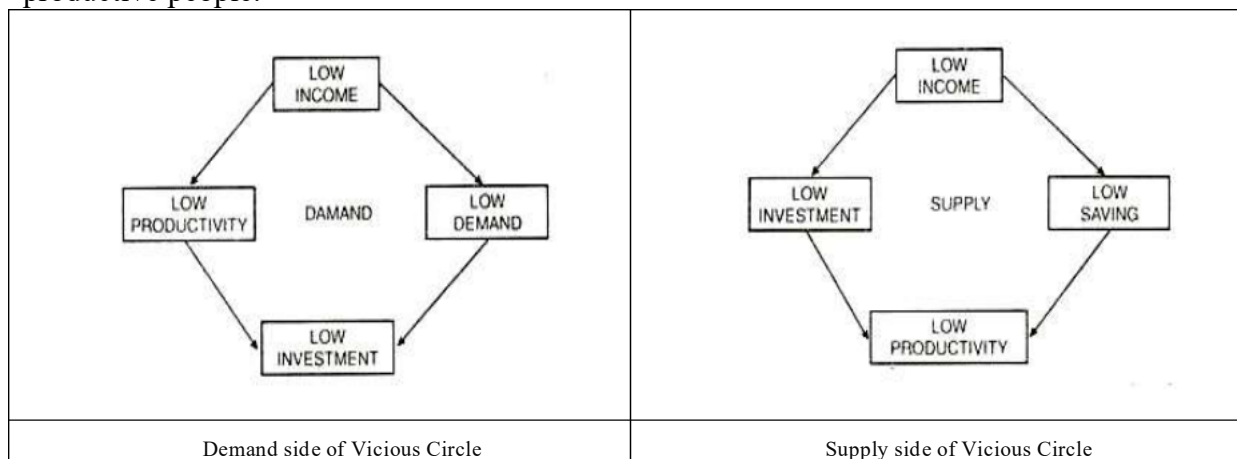

| Demand side of Vicious Circle | Supply side of Vicious Circle |

Figure 1 The impact of poverty on the development

Sources [6] Nurkse R. (1971) the Theory of Development and the Idea of Balanced Growth. In: Mountjoy A.B. (eds) Developing the Underdeveloped Countries. Geographical Readings. Palgrave Macmillan, London

3. METHODOLOGY

In this study the population growth rate, GDP at current prices, consumer price index, and human development index in addition to percentage of population use internet, percentage of export and import of ITC of the total trade are used as dependent variables, regression between the dependent variables and poverty is conducted. Data from different resource such as UNDP databank [7], Central Bank of Jordan [8], Ministry of Labor [9], and department of statistics databank [2] are collected from 1999 in which the internet started in Jordan till 2018.

Regression analysis is conducted using the following equation:

$$PR = \alpha + \alpha_1 EGR + \alpha_2 GDP + \alpha_3 CPI + \alpha_4 HDI + \alpha_5 INT + \alpha_6 UER + \alpha_7 EXICT + \alpha_8 IMITC + \alpha_9 REEX + \varepsilon$$

Where PR= poverty ratio. EGR=estimated growth, GDP, GDP at current prices, CPI consumer price index, HDI= Human Development Index. INT= internet coverage. UER= unemployment rate. EXICT= percentage of export of ICT of total export, IMITC= Imports of ICT goods % of total exports, REEX= Reexport of ICT goods % of total export and ε= stochastic error

4. POVERTY IN JORDAN

4.1. Poverty Reduction Challenges

Despite the several attempts of the Government to reduce poverty, the fact remains that there is a big challenge due to different factors. such as Jordan is a middle-income country, with an

economic situation featured by several challenges; ongoing deficit in the public budget, high inflation and low economic participation rate in addition to the scarcity and shortage of natural resources and the political conditions prevailing during the last period in the region which resulted in series of huge immigrations to Jordan and lack of job opportunities. All those together leads to reduce the progress of the economic growth and social welfare of people are hardly maintained. All these aspects played a role in increasing the number of poverty pockets and poverty rate from 13.3% in 2008 to 14.4% in 2010. Handling Jordan's socio-economic challenges requires a well-rounded joint effort and support. [10]

Poverty pockets can be defined as district or sub-district in which more than 25% of the population is below the absolute poverty line. In 2010, there are 27 rural poverty pockets (six in Mafraq, one in Zarqa and two in Irbid). These three governorates are also the hosting communities which have the highest numbers of Syrian Refugees and the Zaatari Camp. Considering that the hosting communities are also poverty pockets for Jordanians, this increased the burden on the Government of Jordan. Most of poor households are in urban areas (80.35%) and only (19.65%) are in rural areas.

4.2. Measuring poverty in Jordan

There are many different methods measuring poverty globally and at the national levels. UNDP measures poverty in the Third World using a human poverty index reduce (HPI), which considers three criteria rather than monetary income. These are:

- probability at birth of not attaining 40 years of age
- percentage of illiterate adults
- Services procured by the economy overall.

The quality of these is determined using two elements: the percentage of individuals without access to piped drinking water, and the percentage of children under 5 who are underweight

Despite undeniable monetary poverty, some countries manage to reduce the impact of that poverty by access to services made available to the population. The results issued on the annual reports since 1997.

In addition, food intake measure, which depends on needed calories, food quantities, fat and protein

In Jordan poverty is measured by absolute poverty line which is depends on the cost of satisfying a minimum of basic food and non-food needs. This line depends exclusively on expenditure and not income surveys done by department of statistics every two years. The national poverty line is the simple measure which draws a line between poor and non-poor parts of the population and forms the basis for most other poverty indices. However, many countries use relative poverty lines, such as set the poverty line in relation to the average national income or consumption

Although, the methodological for calculating the poverty line in Jordan changed over time, the predominant focus on an absolute at the expense of a relative poverty line, and the preference of quantitative (monetary) as opposed to qualitative (non-monetary) measures of poverty such as education, health housing remained relatively constant. Accordingly, the poverty line is perceived as rather low by many experts active in the field

5. ANALYSIS OF POVERTY IN JORDAN

Table (1) shows that the percentage of poverty in Jordan is decreased during the period 1997-2010 and stay around 14%. While the absolute poverty line in JD increase from 366 to 814 JD as result of improving of the live standards and the increase needs of the households.

The poverty gap ratio which is a measure of the intensity of poverty as the average poverty gap in the population as a proportion of the poverty line is around 3.6%, the Poverty severity ratio reached the lost value in 2008 and increased to about 1.21%. The figures show that poverty still a major problem in Jordan

At the governorates levels as shown in table (2) that poverty ratio in Jerash, Ajloun and Aqaba governorates increased during the period 1997-2010 which it decreased on the other governorates. In addition, the table shows that the poverty ratios differ and fluctuated from years to years at governorates and the kingdom levels and the poverty pockets is alternated from one governorate to another.

Table 1 Poverty indicators of Jordan selected years

Indicator	1997	2002	2006	2008	2010
Poverty rate (%)	21.3	14.2	13	13.3	14.4
absolute poverty line (JD)	366	392	556	680	814
Abject Poverty Line (food poverty) (JD)	186	187	217	292	336
Nonfood Poverty Line (JD)	179	205	339	388	478
Poverty Gape Ratio (%)	5.3	3.3	2.8	2.6	3.6
Poverty Severity Ratio (%)	2	1.1	0.93	0.79	1.21

Source: department of statistics database

There are slit differences between the Abject Poverty Line and the Nonfood Poverty Line, however the Nonfood Poverty Line increased by more than the Abject Poverty Line, that is increased from 179 to 478JD which represent about 2.7 folds.

Table 2 The Absolute Poverty Line by Governorate

Governorate	1997	2002	2006	2008	2010	Change
Amman	19.6	9.2	9.4	8.3	11.4	Decrease
Balqa	21.8	17.8	15.3	19.7	20.9	Slit decrease
Zarqa	16.3	22.3	14.9	11.2	14.1	Decrease
Madaba	23.9	10.7	10	14.9	15.1	Decrease
Irbid	26	13.8	12.1	14.7	15	Decrease
Mafraq	35.9	25.4	23	31.9	19.2	Decrease
Jerash	19.2	18.4	16.7	20.3	20.3	Increase
Ajloun	17.3	9.7	17.7	13.3	25.6	Increase
Kerak	13	12.2	21.7	17.1	13.4	Slit increase
Tafileh	24.3	10.6	19.1	21.1	17.2	Decrease
Maan	37.3	24.1	12.7	24.2	26.6	Decrease
Aqaba	17	15.2	15.5	11.8	19.2	Increase
Kingdom	21.3	14.2	13	13.3	14.4	Increase

Source: department of statistics data bank

This may be due to concentration of the efforts in some governorates that is there are no comprehensive policy and planes to reduce poverty rather than Radical solutions to reduce poverty.

Table 3 Some economic and demographic indicators of Jordan

Year	Population millions	Estimated Growth Rate	GDP current market prices	GDP fixed current prices	Consumer prices index	HDI	HPI	Unemployment rate
2018	10.3	2.5	29.8	30.0	124.7	0.915	0.723	18.6
2017	10.1	2.4	28.4	25.1	119.3	0.913	0.722	18.3
2016	9.8	2.5	27.4	24.2	115.5	0.91	0.722	15.3
2015	9.6	7.9	26.6	23.5	116.4	0.906	0.721	13
2014	8.8	8.2	25.4	22.4	117.4	0.904	0.72	11.9
2013	8.1	8.8	23.9	21.0	114.1	0.9	0.72	12.6
2012	7.4	6	22.0	19.3	108.9	0.895	0.726	12.2
2011	7.0	4.3	20.5	18.0	104.2	0.89	0.725	1290
2010	6.7	3.2	18.8	16.4	100	0.885	0.728	12.5
2009	6.5	3.1	16.9	15.0	95.4	0.88	0.734	12.9
2008	6.3	3	15.6	14.0	96.1	0.881	0.736	12.7
2007	6.1	3	12.1	10.8	84.3	0.88	0.735	13.1
2006	5.9	2.9	10.7	9.4	80.5	0.877	0.732	14
2005	5.8	2.8	8.9	8.0	75.6	0.873	0.729	13.4
2004	5.6	2.3	8.1	7.2	73.0	0.869	0.717	12.5
2003	5.2	2.6	7.2	6.3	71.2	0.865	0.711	14.5
2002	5.1	2.4	6.8	5.8	69.5	0.862	0.706	15.3
2001	5.0	2.5	6.4	5.5	68.3	0.859	0.708	14.7
2000	4.9	2.5	6.0	5.2	67.1	0.855	0.702	13.6
1999	4.7	2.5	5.8	4.9	66.7	0.85	0.696	13.8

Sources: UNDP databank, Central Bank of Jordan, Ministry of Labor, and department of statistics databank.

The population of Jordan increased from 4.7 to 10.3 million over the period 1999-2018, with big increase over the period 2011-2018 that is from around 7 million to 10.3 million that is as results of unstable political conditions in the region and the migrations to Jordan as the results of wars in the surrounding countries.

However, the population growth rate still around 2.5% annually all over the period 1999-2018, with exceptions for the period 2006- 2015 where it reaches 6-8 % and the highest growth rate is 8% in 2013. This as results of the Syrian refugee's wave to Jordan which put a heavy social and economic burden on the country which leads to increase the poverty ratio in Jordan mainly on the governorates that received the Syrian refugees

Although the unstable conditions in the region, GDP in current market prices and fixed current prices show increase during the period 1999-2018 which reflect the efforts of government to create development in the country. On the other side the consumer prices index is increased by two folds during the period 199-2018. This rises in the consumer prices leads to increase the expenditure of the households on the necessary commodities and increase the poverty lines during the period.

Human development index of Jordan which combines life expectancy, expected years of schooling, mean of years of schooling and per capita Gross National Income (GNI) increased and reach about 0.915 which is very high value compared to other countries.

This increased may be related to improvements of the components of the index especially the education and the per capita GNI, however this index doesn't include factors such as poverty, income inequalities and other factors that measure the nutrient and food intake

Human poverty index reduce (HPI), which take in consideration the probability at birth of not attaining 40 years of age, percentage of illiterate adults and services procured by the economy overall is around 0.723 which means that there are improvement in the three components of the index taking in consideration very low percentage of illiterate and high life expectancy in Jordan.

On the contrary, to above mentioned indicators the rate of unemployment in Jordan is very high and increased over the period 1999-2018 reaching about 18.3%.

As conclusion there are improvements in most of the above-mentioned international indicators but still the percentages of poverty and unemployment rate is very high.

6. FACTORS AFFECTING POVERTY IN JORDAN

Table (4) shows the regression results of the analysis of the factors that affecting the poverty rate in Jordan. The table shows that population growth rate, consumer price index, human development index, and internet usage are significantly affecting the poverty in Jordan. Both population growth rate and the percentage of population use internet negatively affect the poverty in Jordan. This means that two variables decrease the poverty rate while the Human Development Index (HDI) and the consumer prices index positively affect the poverty in Jordan. That is those two variables increase the poverty.

The explanation of those results is that an increase by one percent the consumer price index will increase the poverty by (0.0018). this means that the poverty line which increase so that many people will became under the poverty line considering that the poverty in Jordan is very shallow that in there are any increase or decrease in the income will push down many persons under the poverty line or push up many poor over the poverty line

Table 4 Result of regression of the dependent variables

	Coefficient	t Stat	P-value
Intercept	-0.2609	-0.82	0.432
Estimated Growth Rate	-0.0018	-2.36	0.040
GDP current market prices	-0.0034	-1.59	0.144
consumer prices index	0.0018	2.33	0.042
Human Development Index (HDI)	1.0107	2.64	0.025
Internet	-0.0009	-3.95	0.003
unemployment rate	0.000	-0.01	0.995
Exports of ICT goods % of total exports	0.0007	0.25	0.808
Imports of ICT goods % of total exports	0.0016	0.90	0.391
Reexports of ICT goods % of total export	-0.0003	-0.81	0.437
Adjusted R Square	0.849		
F	12.9		
Significance F	0.0002		

The impact of Human Development Index (HDI) on poverty is positive that is an increase in one unit of the Human Development Index (HDI) will make (1.0107) in poverty in Jordan. This may due to the fact that the life expectancy age in Jordan is very high and over 73 years and those people depend mainly on retirement salary, which is fixed, and the inflation make it decay. So, this will push them under the poverty line.

The one unit of Estimated Growth Rate decrease the poverty in Jordan by (-0.0018) this result can be explained by the high increase in population during the period 2011-2016 which is the result if unstable political conditions and internal wars in the region that immigrate millions of people to Jordan.

The Percentage of population over five years using internet decreases the poverty by (0.0009) unit.

This may due to using internet in creating jobs and income by using the internet in marketing products that generate income, Considering that there are about (1.37) mobile line per person over the age of ten years in Jordan [11], beside that the viability of very low cost of internet in all offers of the mobile, the widespread use of smart phone and the easiness of use

of a lot of free websites and social media that work as a market place such as face book, open sooq. com. etc, all together facilitated the announce and marketing home make products such as food, handmade or other products and services or allow the person became in-home commercial dealer as well as increase the in-home business. This creates an additional income that makes the family move up the poverty line; taking on consideration that poverty line in Jordan is shallow poverty which is measured in monetary value so that any small change in income leads to move the family up or down the poverty line. This in-home work and additional income improve the level of the family so that it becomes over the poverty line. Therefore, the use of internet and the ITC will reduce the poverty rate.

7. CONCLUSION

Revision of the studies shows that despite considerable achievements and progress in reducing poverty in Jordan still there are significant challenges such lack of a coherent policy to reduce poverty, limited public sector capacity, inefficient government and non government agencies working on social protection and the dependency of those policies and direct assistance to poor, high unemployment rate, and the prevailing political and economic conditions in the area that necessity fully implementing a comprehensive policy to reduce poverty in Jordan that depends on creating jobs and income to poor people and make them productive rather than depending on direct monetary assistance .

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